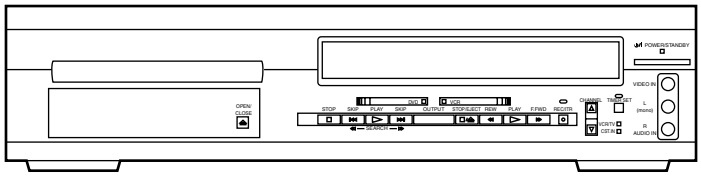
HITACHI

TK | No. 9206E

SERVICE MANUAL

DV-PF2U



VHS

This video deck is VHS type video recorder. For proper operation, only the VHS type cassette must be used.

DVD VIDEO

COMPACT disc DIGITAL AUDIO

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

DVD PLAYER & VIDEO CASSETTE RECORDER

April 2002 Digital Media Division, Tokai

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CHAPTER 1 GENERAL INFORMATION

SPECIFICATIONS

Product type:	DVD player with Video Cassette Recorder
Discs & Tapes:	DVD video Audio CD VHS Video Cassette tape
Converter output:	VHF Channel 3 or 4.
Power source:	120 V AC +/- 10%, 60 Hz +/- 0.5%
Power consumption:	25 W (standby: 7.2 W)
Operating temperature:	5˚C to 40˚C
Dimensions:	W 17-1/8” (435 mm) H 4” (99 mm) D 10-1/2” (266 mm)
Weight:	8.8 lbs (4 kg)

Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

"DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems Inc.

COMPARISON OF MODELS

VTR Section

←: Same as on left

ITEM		DV-PF2U	VT-FX665A/FX665AC
VIDEO	Video Format	VHS	←
	Y/C Separation	Comb Filter	←
	YNR (Luminance Noise Reduction) Circuit	○	←
	New Synchronise Circuit	×	←
	Picture Control	×	←
INPUT/ OUTPUT	Video/Audio Input (Rear)	1/1 (IN1)	←
	Video/Audio Input (Front)	1/1 (IN2)	←
	Video/Audio Output (Rear)	1/1 (OUT1)	←
OTHER	Remote Controller	DV-RMPF2	VT-RMF1
	Stereo CM Skip Feature	×	○
	Auto Clock Feature	×	○
	Number of Timer Programming	7 Program/year	←
	Self Diagnosis Funtion	○ (4 Modes)	←
	Back-up Time	30 s	←
	SQPB	○	←
	Surge Absorber	○	←
	Auto Power Off Feature	○	←
	Local Broadcast Setting	○	←
	Multi Search Feature	○ (Index, Time Search)	←
MECHANISM	Search Speed	SP: X5 LP: X5/X9 EP: X5/X15	SP: X5 EP: X5/X15
	FF/REW Time (T-120 Tape)	FF: approx. 4 min, REW: approx. 4 min	←
	Head Composition	DA4+Hi-Fi SP: 2[49/58 μm] EP: 2[21/21 μm] Hi-Fi Audio: 2[28/28 μm]	←
	Video Head Material	SP: Ferrite EP: Ferrite Hi-Fi Audio: Ferrite	←
	VISS	○ (Index Search)	○

DVD Section

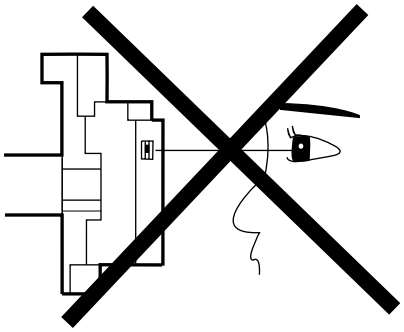
←: Same as on left

ITEM		DV-PF2U	DV-P315U/P313U
GENERAL	Drive Speed	1x	←
	Laser	2	1
	DVD/VCD/SVCD/CD-DA	O / --- / --- / O	O / O / O / O
	CD-R/CD-RW/DVD-R (Video Format)	O / O / O	--- / --- / ---
	DVD-RAM (VR Format)	---	←
	MP3	O	---
	OSD languages	3 (English, French, Spanish)	←
	Jog Shuttle on Front	---	←
	Headphone Jack / Volume	---/---	←

VIDEO	PAL Disc NTSC Out	---	←
	Video Out Mode NTSC/PAL/PAL60	O / --- / ---	←
	S-Video / Component / Composite	O / O / O	←
	Video D/A Converter	10bit	←
	Black Level Select	O	←
	Picture Control	---	←
	Progressive Out	O	---
AUDIO	Audio D/A Converter	192kHz / 24bit	96kHz / 24bit
	Digital Audio Out Optical / Coaxial	--- / O	O / O
	Dolby Digital 5.1 ch Decode	---	←
	DTS Digital Out	O	←
	Virtual Surround	O	←
	Dynamic Range Compression (Dolby Digital)	O	←
	DVD Audio	---	←
	Power on sound	---	←
TRICK PLAY	Search Speed (DVD: 2, 8, 30, 60/ VCD: 2, 8, 30/CD: 16)	2 to 60 (FORWARD/REWIND)	2 to 128 (FORWARD/REWIND)
	Slow Speed	1/16, 1/8, 1/2 (FORWARD only)	1/8, 1/4, 1/2 (FORWARD only)
	IP Search (Smooth 2x Play)	O	←
	2x Play with Audio	---	←
	Step Forward / Reverse	O / ---	←
	Still Picture Select (Frame/Field)	Auto Only	O
FEATURES	Disc Navigation	---	O (DV-P315U) --- (DV-P313U)
	DVD Zoom x2 / x4 / x16	O / O / ---	←
	Program and Random Play of DVD / VCD	---	O / O
	A-B Repeat	O	←
	Repeat	O	←
	Last Play	O	←
	Closed Caption for NTSC DVD	O	←
	Front Panel Display Dimmer	O	←
	Screen Saver	O	←
	Auto Power Off	O	←
REMOTE CONTROL	Jog Shuttle on Remote	---	←
	TV Control	O	---
ACCESSORY	Remote Controller	O	←
	Battery	O	←
	AV Cable	O	←
	S Cable	---	←
	AC Socket	---	←
	Warranty Card	O	←

LASER BEAM SAFETY PRECAUTIONS

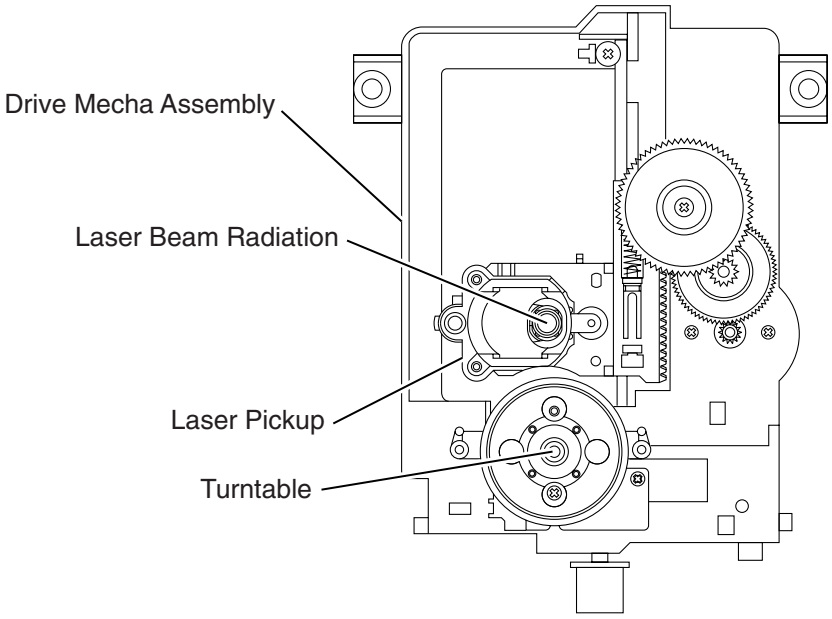
This DVD player uses a pickup that emits a laser beam.



Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 30cm away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.

Caution: Use of controls and adjustments, or doing procedures other than those specified herein, may result in hazardous radiation exposure.



Location: Inside Top of DVD mechanism.

IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced**.**

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1)Wires covered with PVC tubing

2)Double insulated wires

3)High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1)Insulation tape

2)PVC tubing

3)Spacers

4)Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
Replacement procedure

1)Remove the old connector by cutting the wires at a point close to the connector.
Important: Do not re-use a connector. (Discard it.)

2)Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

3)Align the lengths of the wires to be connected. Insert the wires fully into the connector.

4)Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1 : Ratings for selected area

AC Line Voltage	Clearance Distance (d) (d')
120 V	≥ 3.2mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

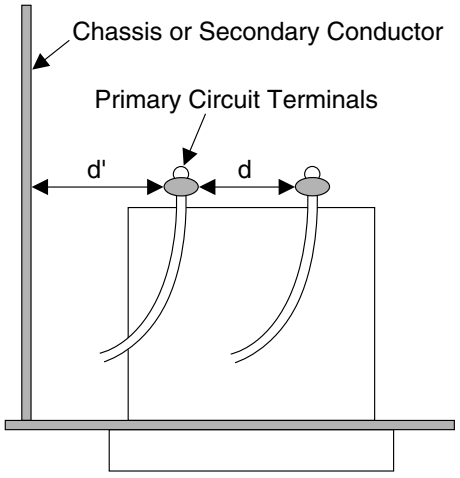


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

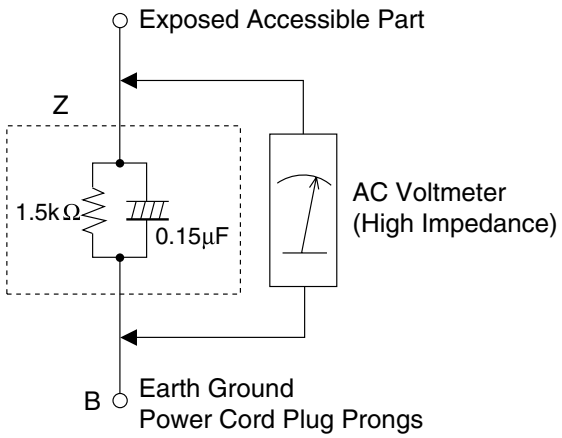


Fig. 2

Table 2: Leakage current ratings for selected areas

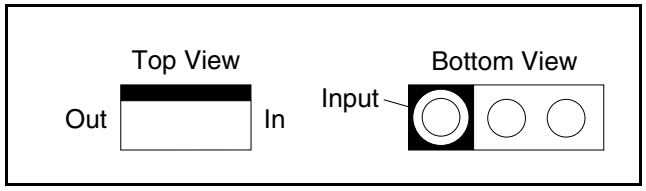
AC Line Voltage	Load Z	Leakage Current (i)	Earth Ground (B) to:
120 V	0.15μF CAP. & 1.5kΩ RES. Connected in parallel	i≤0.5mA Peak	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

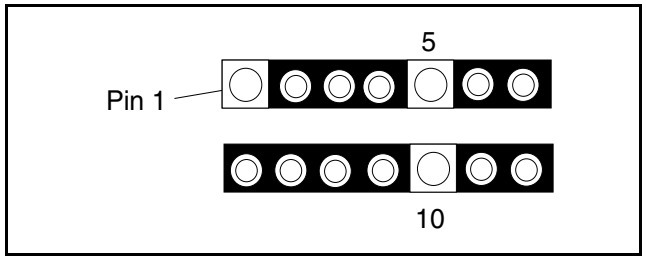
STANDARD NOTES FOR SERVICING

Circuit Board Indications

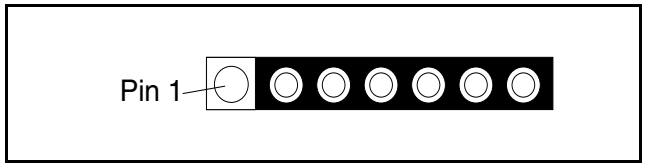
a. The output pin of the 3 pin Regulator ICs is indicated as shown.



b. For other ICs, pin 1 and every fifth pin are indicated as shown.

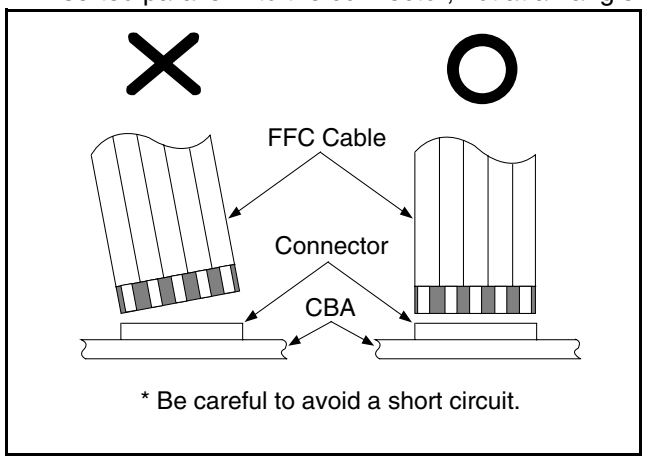


c. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:.

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

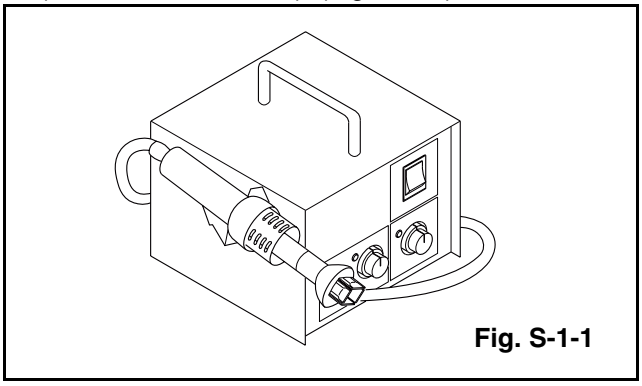


Fig. S-1-1

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

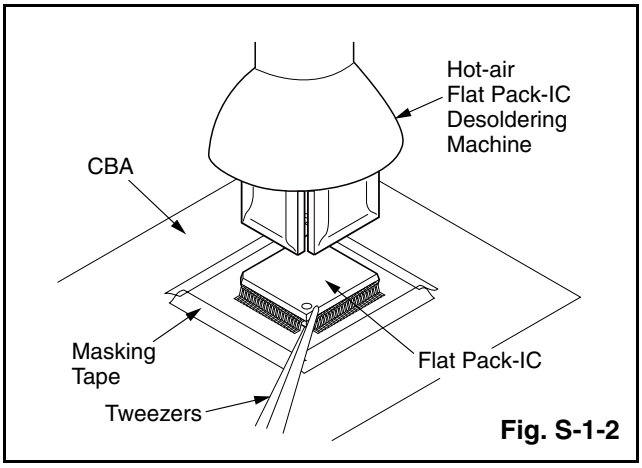


Fig. S-1-2

With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

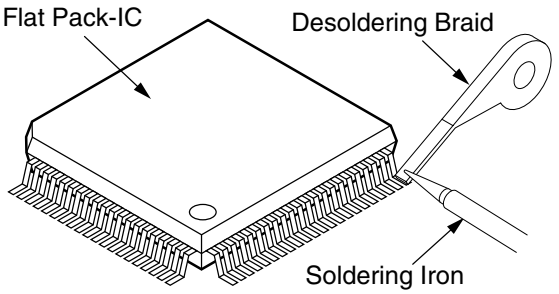


Fig. S-1-3

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

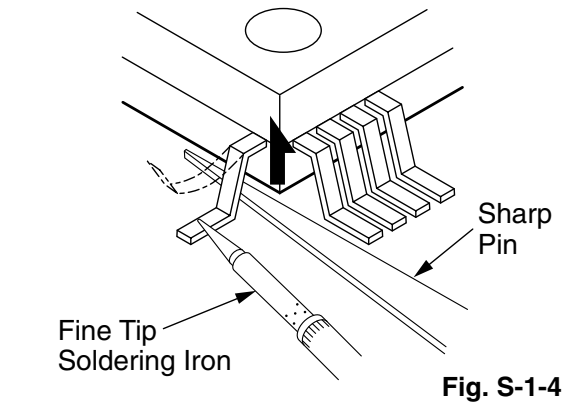


Fig. S-1-4

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5

(4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

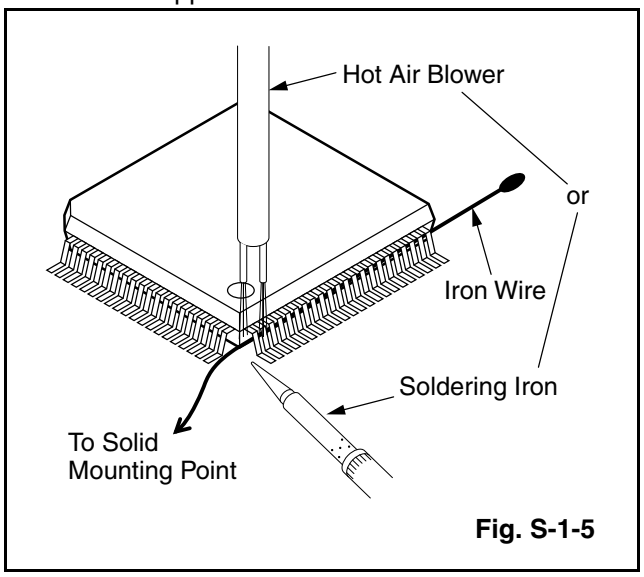


Fig. S-1-5

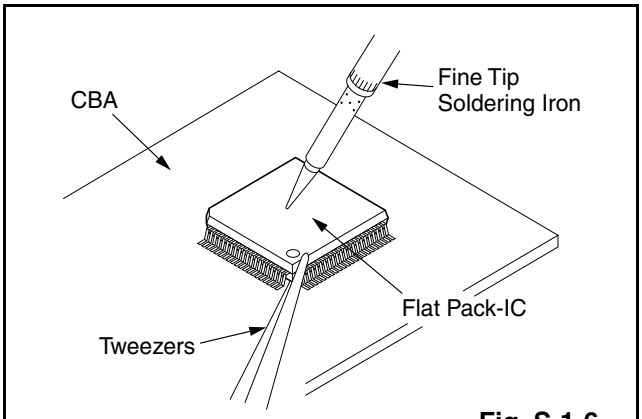


Fig. S-1-6

2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

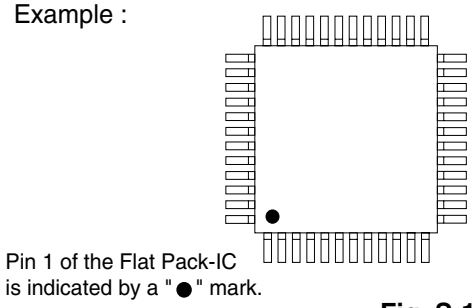


Fig. S-1-7

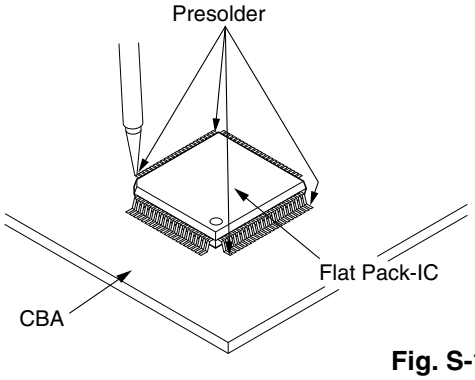


Fig. S-1-8

Instructions for Handling Semi-conductors

Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

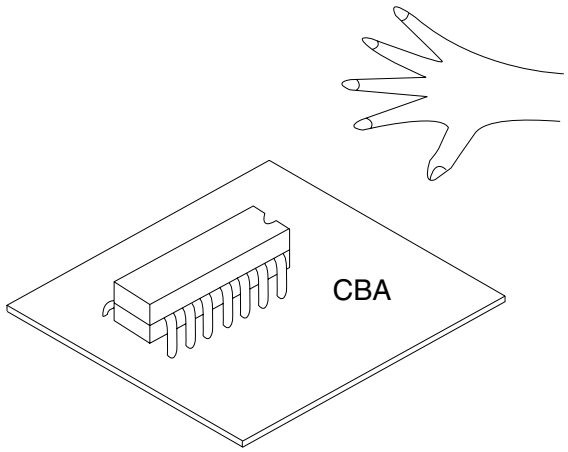
1. Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

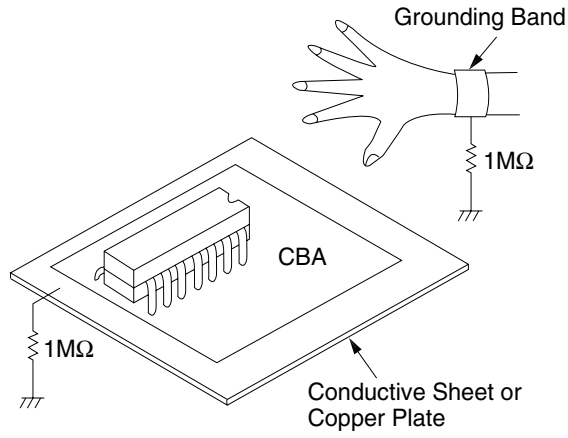
2. Ground for Workbench

(1) Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.

< Incorrect >



< Correct >



PREPARATION FOR SERVICING

How to Enter the Service Mode

About Optical Sensors

Caution:

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

What to do for preparation

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly. Make sure the power is on, TP502 (SENSOR INHIBITION) to GND. This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.) See Fig. 1.

Note: Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

About REC-Safety Switch

Caution:

The REC-Safety Switch is directly mounted on the Main CBA. When the Deck Mechanism Assembly is removed from the Main CBA for servicing, this switch does not work automatically.

What to do for preparation

In order to record, press the Rec button while pushing REC-SAFETY SW on the Main CBA. See Fig. 1.

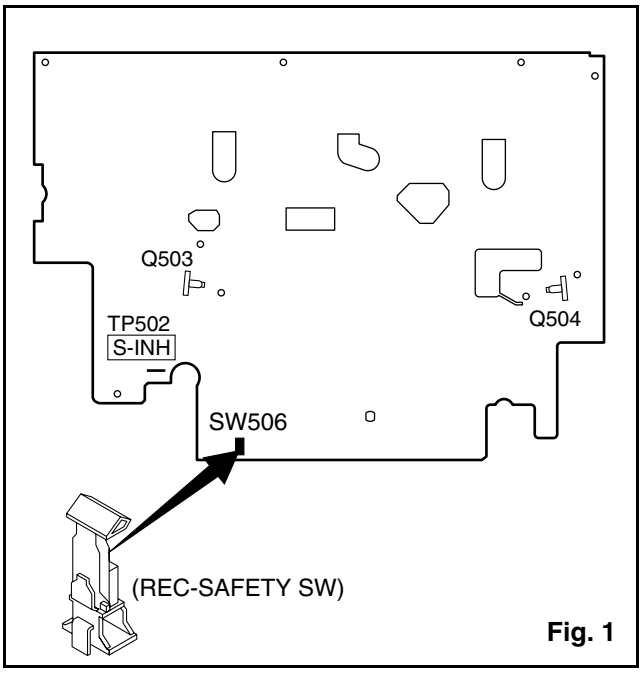
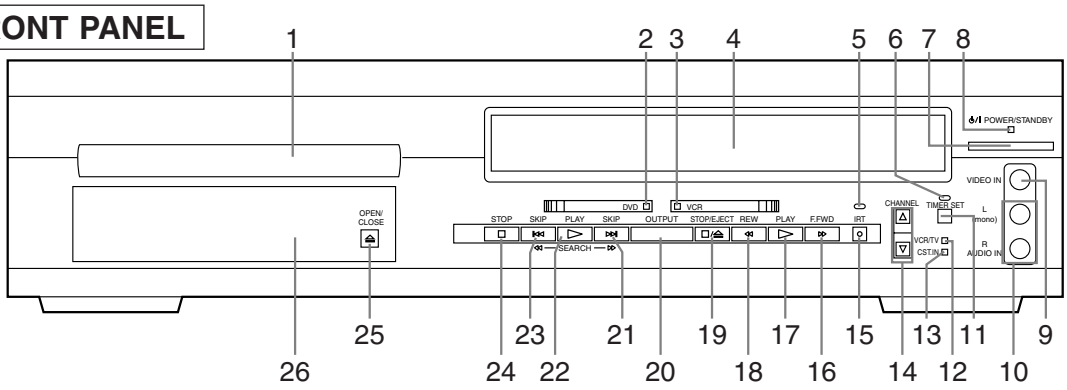


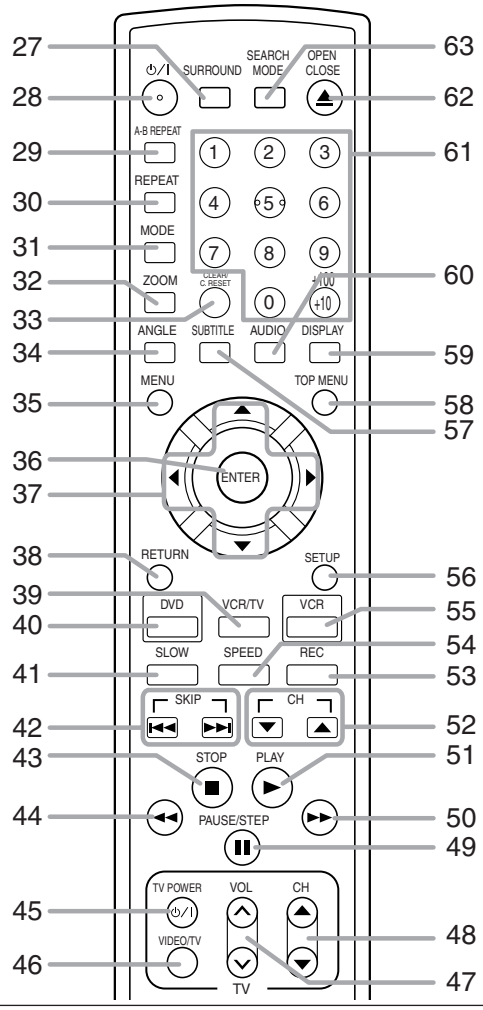
Fig. 1

OPERATING CONTROLS AND FUNCTIONS

FRONT PANEL



REMOTE CONTROL



VCR operation Buttons : Blue
DVD operation Buttons : Yellow
Common operation Buttons : White

1. **Disc loading tray**
2. **DVD OPERATION Light (Green)**
   This light appears when the DVD output mode is selected. You can only watch DVDs when the green DVD OUTPUT Light is on. To make the green DVD OUTPUT light come on, press the DVD Button on the remote control or the OUTPUT Button on the front panel.
3. **VCR OPERATION Light (Green)**
   This light appears when the VCR output mode is selected. You can only watch tapes when the green VCR OUTPUT light is on. To make the green VCR OUTPUT light come on, the VCR Button on the remote control or the OUTPUT Button on the front panel.
4. **CASSETTE COMPARTMENT**
5. **IRT Light**
   Lights up during recording.
6. **TIMER SET Light**
   This light glows when the DVD/VCR is in standby mode or off for a timer recording or during a One-Touch Recording. It flashes if the TIMER SET Button is pressed for a timer recording, but there is no tape in the DVD/VCR. It flashes when all timer recordings or Instant Recording Timer are finished.
7. **⏻/I POWER/STANDBY Button**
   Press to turn the power on and off.
8. **⏻/I POWER/STANDBY Light**
   Lights up when the power is on.
9. **VIDEO In Jack**
   Connect a video cable coming from the video out jack of a camcorder, another VCR, or a video source (laser disc player, etc.) here.
10. **AUDIO In Jacks**
    Connect audio cables coming from the audio out jacks of a camcorder, another VCR, or an audio source here.
11. **TIMER SET Button**
    Press to put the DVD/VCR into standby mode for a timer recording.
12. **VCR/TV Light**
    Lights up when the DVD/VCR is in the VCR position, and goes off when it is in the TV position.
13. **CST. IN Light**
    Lights up when a cassette is in the DVD/VCR.
14. **CHANNEL Buttons**
    In VCR mode, press to change TV channels on the DVD/VCR; press to adjust the tracking during normal or slow motion playback; press to remove vertical jitter in a Still picture.
15. **IRT Button (VCR)**
    Press once to start a recording. Press repeatedly to start a Instant Recording Timer.

16. **F.FWD Button (VCR)**
Press to rapidly advance the tape, or view the picture rapidly in forward during playback. (Forward Search). When setting program (For example:setting clock or timer program), press to determine your selection and proceed to the next step you want to input. Press to determine the setting modes from the on screen menu. Press to add or delete channel numbers during channel preset.

17. **PLAY Button (VCR)**
Press to begin playback. Press to enter digits when setting program (For example: setting clock or timer program). Press to select the setting modes from the on screen menu.

18. **REW Button (VCR)**
Press to rewind the tape, or to view the picture rapidly in reverse during the playback mode (Rewind Search). Press to cancel a setting of timer program. Press to correct digits when setting program (For example: setting clock or timer program). Press to add or delete channel numbers during channel preset.

19. **STOP/EJECT Button (VCR)**
- **EJECT Button**
Press to remove the tape from the VCR.
- **STOP Button**
Press to stop the tape motion. Press to enter digits when setting program (For example:setting clock or timer program). Press to select the setting modes from the on screen menu.

20. **OUTPUT Button**
Press to select DVD mode or VCR mode.
- You can switch the output mode either by pressing the OUTPUT Button on the front panel, or by pressing the DVD or VCR Button on the remote control. However, **if you press the OUTPUT Button on the front panel first, you need to re-select the corresponding mode by pressing the DVD or the VCR Button on the remote control.**

21. **SKIP/SEARCH(▶▶|/ ►►) Button (DVD)**
Plays back from the beginning of the next chapter or track. Hold down to fast forward playback.

22. **PLAY Button (DVD)**
Starts playback of the disc contents.

23. **SKIP/SEARCH(|◀◀/ ◄◄) Button (DVD)**
Plays back from the beginning of the current chapter or track. Hold down to fast reverse playback.

24. **STOP Button (DVD)**
Stops operation of the disc.

25. **OPEN/CLOSE Button**
Press to insert discs into or remove them from the tray.

26. **Display, Remote Sensor Window**

27. **SURROUND Button**

28. **⏻/| (POWER/STANDBY) Button**
Press to turn the power on and off.

29. **A-B REPEAT Button**
Repeats playback of a selected section.

30. **REPEAT Button**
Repeats playback of the current disc, title, chapter or track.

31. **MODE Button**
Activates program playback or random playback mode when playing CDs or MP3. Sets Black level or SRS TruSurround.

32. **ZOOM Button**
Enlarges part of a DVD-reproduced image.

33. **CLEAR/C.RESET Button**
- **DVD mode**
Press to reset the setting.
- **VCR mode**
Press to reset the counter. Press to exit from the MENU screen.

34. **ANGLE Button**
Press to change the camera angle to see the sequence being played back from a different angle.

35. **MENU Button**
- **DVD mode**
Press to display the menu of the Disc.
- **VCR mode**
Press to access the VCR menu.

36. **ENTER Button**
Press to accept a setting.

37. **Arrow Buttons**
Use when making settings while watching the display on a TV screen.

38. **RETURN Button**
Returns to the previous operation.

39. **VCR/TV Button**
Use to select VCR or TV position. If the VCR/TV light appears on the front of the DVD/VCR, it is in VCR position (in either VCR or DVD mode). If the VCR/TV light doesn't appear on the front of the DVD/VCR, it is in TV position.
- **VCR Position**
When the green VCR OUTPUT light appears on the front of the DVD/VCR, use the VCR to watch a tape, watch a TV program while recording it, or watch a TV broadcast using the CHANNEL or Number Buttons to change channels at the DVD/VCR.
When the green DVD OUTPUT light appears on the front of the DVD/VCR, use the DVD/VCR to view Disc playback or menus.
- **TV Position**
Use to watch TV (changing channels at the TV) or watch one program while recording another.

40. **DVD Button**
Press to select DVD mode for the remote control.
- You can switch the OUTPUT mode either by pressing the OUTPUT Button on the front panel, or by pressing the DVD or the VCR Button on the remote control. However, **if you press the OUTPUT Button on the front panel first, you need to re-select the corresponding mode by pressing the DVD or the VCR Button on the remote control.**

41. **SLOW Button**
During tape playback, press to view the video tape in slow motion. Press again to resume normal playback. This Button does not affect DVD playback.

42. **SKIP Buttons**
- **DVD mode**
Press to skip Chapters or Tracks.

43. **Stop Button**
- **DVD mode**
Stops operation of the disc.
- **VCR mode**
Press to stop the tape motion. Press to enter digits when setting program (For example: setting clock or timer program). Press to select the setting modes from the on screen menu.

44. ◄◄ Button

● **DVD mode**

Press to view the DVD picture in fast reverse motion or to reverse playback of an Audio CD.

● **VCR mode**

Press to rewind the tape, or to view the picture rapidly in reverse during the playback mode (Rewind Search). Press to cancel a setting of timer program. Press to correct digits when setting program (For example: setting clock or timer program). Press to add or delete channel numbers during channel preset.

45. TV POWER Button

46. VIDEO/TV Button

47. VOL Buttons

48. CH Buttons

49. PAUSE/STEP Button

● **DVD mode**

Press to pause Disc playback. Press repeatedly to advance the DVD picture step by step (or one frame at a time).

● **VCR mode**

While recording, press to temporarily stop the recording (pause). Press a second time to resume normal recording. You can not pause a One-Touch Recording. Or, press during tape playback to freeze the picture. Press to advance the picture one frame at a time during still mode.

50. ►► Button

● **DVD mode**

Press to fast forward the Disc. Press the Pause Button, then press the FWD Button to begin slow motion playback. Press the FWD Button repeatedly to change the forward speed of slow motion.

● **VCR mode**

Press to rapidly advance the tape, or view the picture rapidly in forward during playback (Forward Search). When setting program (For example: setting clock or timer program), press to determine your selection and proceed to the next step you want to input. Press to determine the setting modes from the on screen menu. Press to add or delete channel numbers during channel preset.

51. PLAY Button

● **DVD mode**

Press to begin playback.

● **VCR mode**

Press to begin playback. Press to enter digits when setting program (For example: setting clock or timer program). Press to select the setting modes from the on screen menu.

52. CH Buttons

Press to change TV channels on the DVD/VCR.

53. REC Button

Press once to start a recording.

54. SPEED Button

Press to select the VCR's recording speed (SP or SLP)

55. VCR Button

Press to select VCR mode for the remote control.

● You can switch the OUTPUT mode either by pressing the OUTPUT Button on the front panel, or by pressing the DVD or the VCR Button on the remote control. However, **if you press the OUTPUT Button on the front panel first, you need to re-select the corresponding mode by pressing the DVD or the VCR Button on the remote control.**

56. SETUP Button

Press to enter the setup mode.

57. SUBTITLE Button

Press to select the desired subtitle language.

58. TOP MENU Button

59. DISPLAY Button

● **DVD mode**

Press to access or remove the display screen during DVD or Audio CD playback.

● **VCR mode**

Press to access or remove the VCR's on-screen status display.

60. AUDIO Button

Press to select a desired audio language or sound mode.

61. Number Buttons

● **DVD mode**

Press to directly select a Track (Audio CD) for playback.

Press to program Tracks (Audio CD) for playback.

● **VCR mode**

Press to select TV channels on the DVD/VCR.

To select channels, enter channel numbers as a two-digit number for the quickest results. For example, to select channel 6, press 0 then 6.

+100 Button:

If you want to select channels 100 and above, press this Button first, then press the last two digits. For example, to select channel 125, press +100 Button first, then press 2 and 5.

62. OPEN/CLOSE Button

Press to insert discs into or remove them from the tray.

63. SEARCH MODE Button

● **DVD mode**

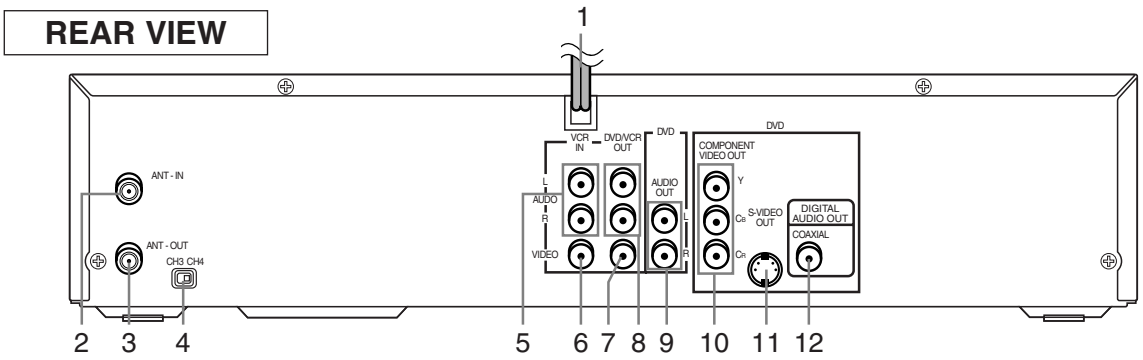
Press to access or remove the Search display, which allows you to go directly to a specific Title/Chapter/Track/Time.

● **VCR mode**

Press to perform a Time Search or an Index Search.

DESCRIPTION-REAR PANEL

REAR VIEW



1. **AC POWER CORD**
   Connect to a standard AC outlet to supply power to the DVD/VCR.
2. **ANT-IN (Antenna In) Jack**
   Connect your antenna, Cable Box, or Direct Broadcast System.
3. **ANT-OUT (Antenna Out) Jack**
   Use the supplied RF coaxial cable to connect this jack to the ANTENNA IN Jack on your TV.
4. **CH3/CH4 SWITCH**
   Set to channel 3 or 4 to use your TV with your DVD/VCR.
5. **ANALOG AUDIO IN JACKS (VCR only)**
   Connect audio cables coming from the audio out jacks of a camcorder, another VCR, or an audio source here.
6. **VIDEO IN JACK (VCR only)**
   Connect a cable coming from the video out jack of a camcorder, another VCR, or an audio-visual source (laser disc player, video disc player, etc.) here.
7. **VIDEO OUT JACK (DVD/VCR)**
   Connect the yellow video cable (supplied) here and to the TV's Video In jack.
8. **ANALOG AUDIO OUT JACKS (DVD/VCR)**
   Connect the supplied audio cables here and to the Audio In jacks of a television or other audio equipment.
9. **ANALOG AUDIO OUT JACKS (DVD only)**
   Connect the supplied audio cables here and to the Audio In jacks of a television or other audio equipment.
10. **COMPONENT VIDEO OUT JACKS (DVD only)**
    Connect optional component video cables here and to the component Video In jacks of a television.
11. **S-VIDEO OUT JACK (DVD only)**
    Connect an optional S-Video cable here and to the S-Video In jack of a television.
12. **DIGITAL AUDIO OUT JACK (DVD only)**
    Connect an optional coaxial digital audio cable here and to the Coaxial Digital Audio In jack of a decoder or audio receiver.

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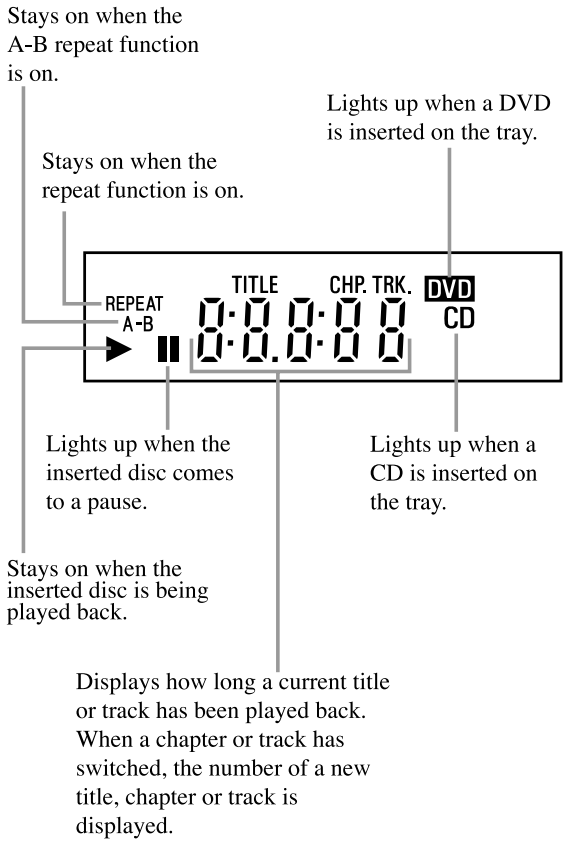
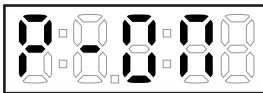
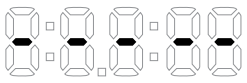
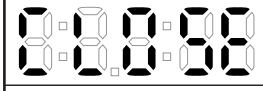
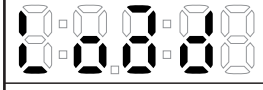
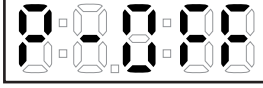
"DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

DISPLAY

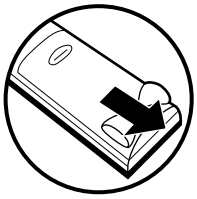

Stays on when the A-B repeat function is on.
Lights up when a DVD is inserted on the tray.
Stays on when the repeat function is on.
TITLE
CHP. TRK.
DVD
REPEAT
A-B
CD
Lights up when the inserted disc comes to a pause.
Lights up when a CD is inserted on the tray.
Stays on when the inserted disc is being played back.
Displays how long a current title or track has been played back. When a chapter or track has switched, the number of a new title, chapter or track is displayed.

DISPLAYS DURING OPERATION

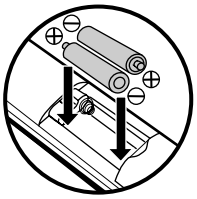
	Power on
	No disc inserted
	Tray open
	Tray closed
	Loading the Disc
	Power off

LOADING THE BATTERIES

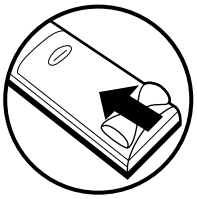
1. Open the battery compartment cover.



2. Insert two AA batteries, with each one oriented correctly.



3. Close the cover.



Notes

- Do not mix alkaline and manganese batteries.
- Do not mix old and new batteries.

FIRMWARE RENEWAL MODE

HOW TO UPDATE THE FIRMWARE VERSION

1. Turn the power on and remove the disc on the tray.
2. To put the DVD player into version up mode, press [9], [8], [7], [6], and [SEARCH MODE] buttons on the remote control unit in that order. The tray will open automatically.
   Fig. a appears on the screen and Fig. b appears on the VFD.

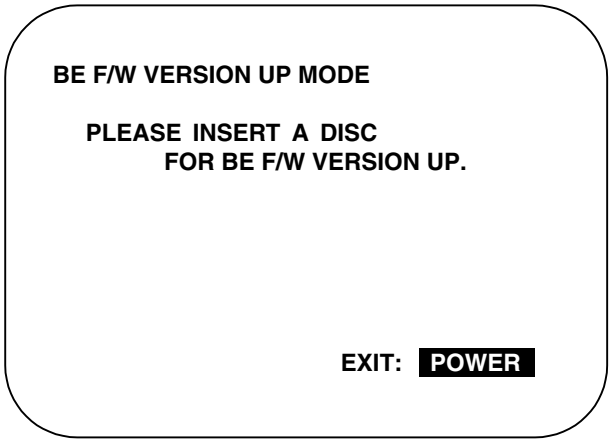


Fig. a Version Up Mode Screen

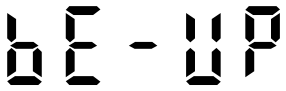


Fig. b VFD in Version Up Mode

   The DVD player can also enter the version up mode with the tray open. In this case, Fig. a will be shown on the screen while the tray is open.

3. Load the disc for version up. (For closing the tray, only the "OPEN/CLOSE" button is available.)
4. The DVD player enters the F/W version up mode automatically. Fig. c appears on the screen and Fig. d appears on the VFD.

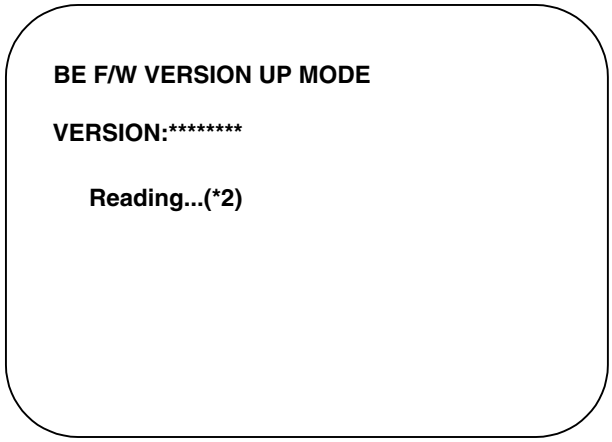


Fig. c Programming Mode Screen

Fig. d VFD in Programming Mode (Example)

   The appearance shown in (*2) of Fig. c is described as follows:

No.	Appearance	State
1	Reading...	Sending files into the memory
2	Erasing...	Erasing previous version data
3	Programming...	Writing new version data

5. After programming is finished, the tray opens automatically. Fig. e appears on the screen and the checksum in (*3) of Fig. e appears on the VFD. (Fig. f)

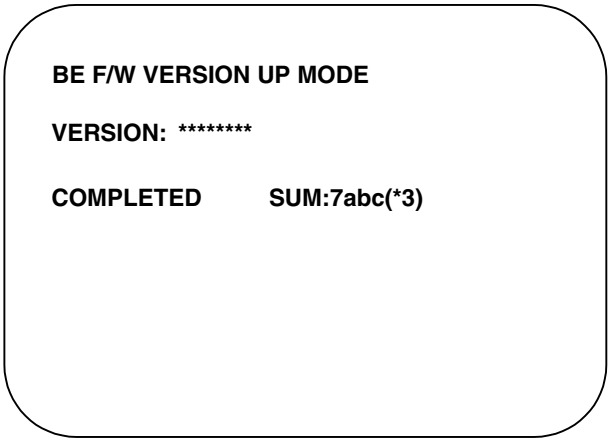


Fig. e Completed Program Mode Screen

Fig. f VFD upon Finishing the Programing Mode (Example)

   At this time, no buttons are available.

6. For tray opening, plug the AC cord into the AC outlet.
7. Turn the power on by pressing the power button and the tray will close.

HOW TO VERIFY THE FIRMWARE VERSION

1. After making sure that no disc is in unit, turn the power on.
2. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order. The B/E version appears on the VFD, and the F/E and B/E versions appear on TV screen.

TROUBLESHOOTING

FLOW CHART NO.1

The power cannot be turned on.(1)

Is the fuse normal?
- No → Replace the fuse.
  - No → See FLOW CHART No.3 <The fuse blows out.>
- Yes ↓

Is normal state restored when once unplugged power cord is plugged again after several seconds.
- No → Check for lead or shor-circuiting of primary circuit component? (Q1001, Q1003, D1001, D1002, D1004, D1005, D1011, T1001, C1003, C1005, etc.)
- Yes ↓

Is the EV 5V line voltage normal?
- No → (same as above)
- Yes ↓

Is the voltage of EV 12V, EV -30V and filament voltage normal?
- No → Check each rectifying circuit of secondary circuit.

FLOW CHART NO.2

The power cannot be turned on.(2)

Does the change from STANDBY LED indicate turn-off?
- Yes → The STANDBY LED indicate is flashing after 0.5 sec.
- Yes ↓

Is the supply voltage of 3.3V fed to Q2021?
- No → Check the EV 3.3V line.
- Yes ↓

Is the supply voltage of 5V fed to pin(3) of IC2001?
- No → Check the IC2001.
- Yes ↓

Is the "H" signal inputted at base of Q2021, when the POWER button activated on the DVD?
- No → Check the SW2008 and POWER button line.
- Yes ↓

Is the "H" signal inputted at base of Q2021, when the POWER button activated on the remote control unit?
- No → Check the line between the remote control receiver and the pin(125) of IC601.
- Yes ↓

Replace IC601.

The STANDBY LED indicate is flashing after 0.5 sec.

Yes (below, confirmed operating at LED turn-off of 0.5 sec. interval.)

Are the "P-CON-H" pulse outputted from the Pin(207) of IC601?
- No → Replace IC601.
- Yes ↓

Is the P-CON switch circuit operated normally? (Q1002, Q1005, Q1006, IC1002, D1036, D1046)
- No → Check each component and if poor the replace.

FLOW CHART NO.3

The fuse blows out.

Is there leaking or short-circuited primary component?

Check for short-circuiting of rectifying diode and circuit in each rectifying circuit of secondary side.

FLOW CHART NO.4

When the output voltage fluctuates.

↓

Does the secondary side photo coupler circuit operate normally?

No → Check the circuit and replace the parts. (IC1001, IC1006, D1048, D1015, etc.)

↓ Yes

Does the primary side photo coupler circuit operate normally?

No → Check the circuit and replace the parts. (IC1001, IC1012, D1024, etc.)

↓ Yes

Replace IC1001.

FLOW CHART NO.5

When buzz is heard from the vicinity of power circuit.

↓

Check for short-circuiting of rectifying diode and circuit in each rectifying circuit of secondary side. (D1003, D1030, D1008, D1009, D1013, D1016, Q1002, IC1002, Q1007, Q1010, Q1011, Q1014, Q1004, etc.)

FLOW CHART NO.6

The fluorescent display tube does not light.

↓

Is the supply voltage of 5V fed to pin(6) and pin(24) of IC2001?

No → Check the EV 5V line.

↓ Yes

Is the supply voltage of -24V fed to pin(15) of IC2001?

No → Check the -FL -24V line.

↓ Yes

Is there 500kHz oscillation at pin(26) of IC2001?

No → Check R2001, IC2001 and their periphery.

↓ Yes

Check the signal lines of FIP DA, FIP CK, FIP CS of IC2001 and IC601?

No → Check or replace IC2001 and IC601.

↓ Yes

Are the filament voltage applied between (1), (2) and (38), (39) of the fluorescent display tube? Also negative voltage applied between these pins and GND?

No → Check the power circuit, D1017, Q2023, Q2024 and Q2025.

↓ Yes

Check the fluorescent display tube and its periphery?

No → Check that the fluorescent display tube is free from damages such as crack.

FLOW CHART NO.7

The key operation is disabled.

↓

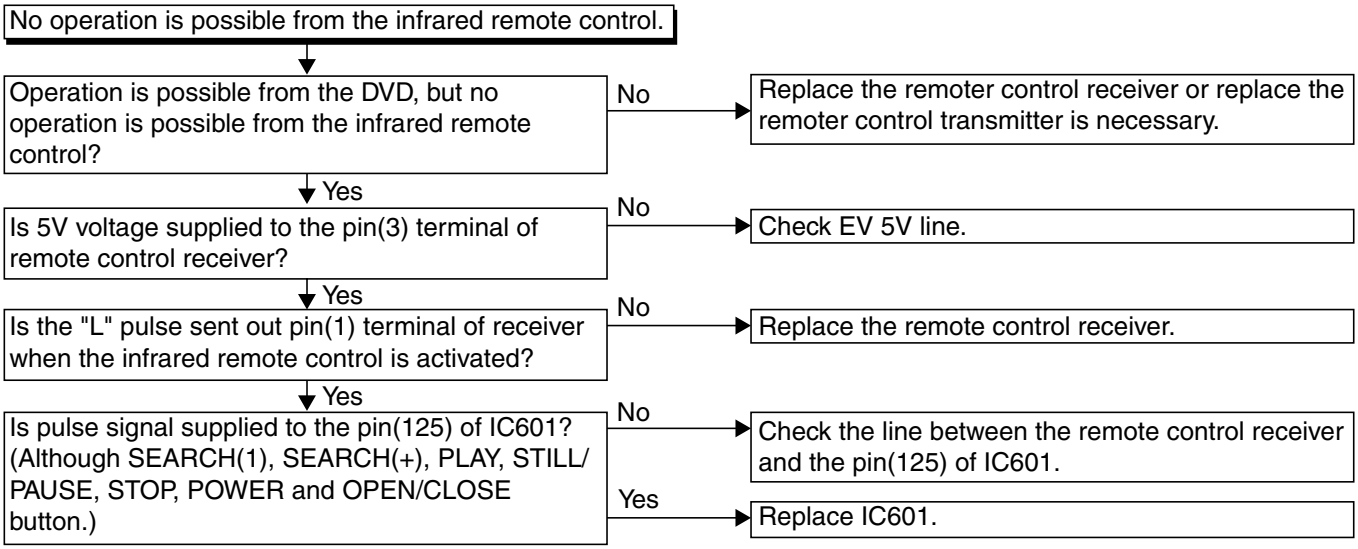
Is key switch contact and installation state normal?

No → Replace key switch.

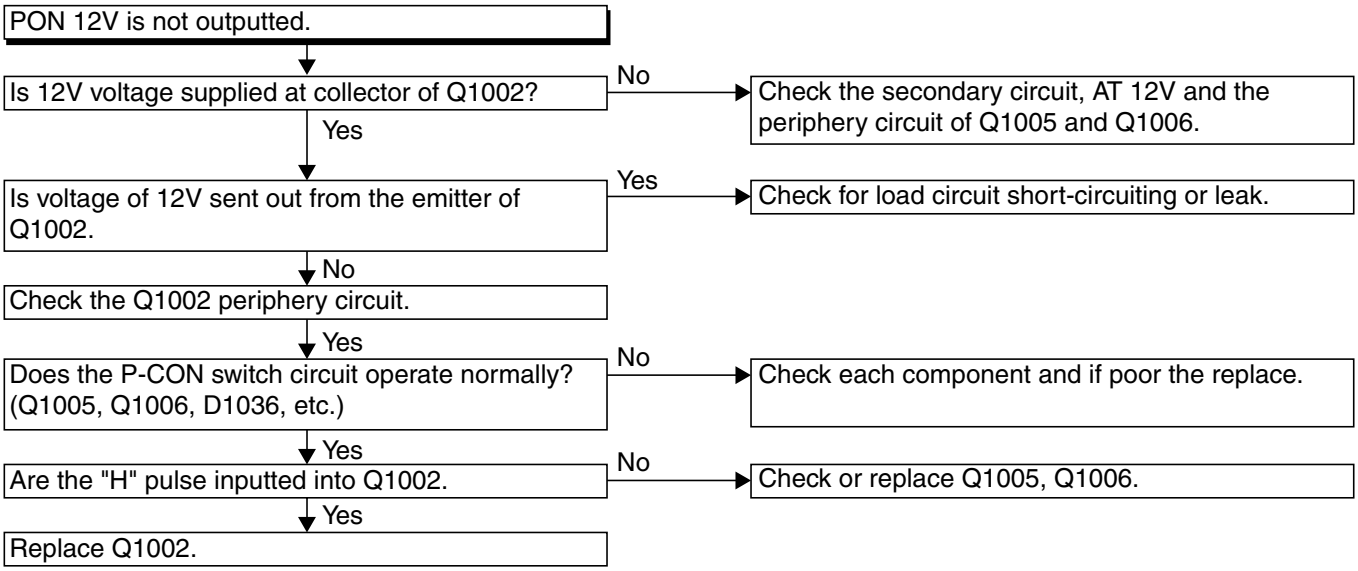
↓ Yes

Is the control voltage normally into the pins(3), (4), (7), (8), (9), (10) of IC2001?

FLOW CHART NO.8


No operation is possible from the infrared remote control.
Operation is possible from the DVD, but no operation is possible from the infrared remote control?
No
Replace the remoter control receiver or replace the remoter control transmitter is necessary.
Yes
Is 5V voltage supplied to the pin(3) terminal of remote control receiver?
No
Check EV 5V line.
Yes
Is the "L" pulse sent out pin(1) terminal of receiver when the infrared remote control is activated?
No
Replace the remote control receiver.
Yes
Is pulse signal supplied to the pin(125) of IC601? (Although SEARCH(1), SEARCH(+), PLAY, STILL/ PAUSE, STOP, POWER and OPEN/CLOSE button.)
No
Check the line between the remote control receiver and the pin(125) of IC601.
Yes
Replace IC601.

FLOW CHART NO.9


PON 12V is not outputted.
Is 12V voltage supplied at collector of Q1002?
No
Check the secondary circuit, AT 12V and the periphery circuit of Q1005 and Q1006.
Yes
Is voltage of 12V sent out from the emitter of Q1002.
Yes
Check for load circuit short-circuiting or leak.
No
Check the Q1002 periphery circuit.
Yes
Does the P-CON switch circuit operate normally? (Q1005, Q1006, D1036, etc.)
No
Check each component and if poor the replace.
Yes
Are the "H" pulse inputted into Q1002.
No
Check or replace Q1005, Q1006.
Yes
Replace Q1002.

FLOW CHART NO.10

PON 5V is not outputted. (PON 12V is possible.)

↓

Is 5V voltage supplied at collector of Q1004? — No → Check the AT 5V line.

↓ Yes

Is voltage of 5V sent out from the collector of Q1004? — Yes → Check for load circuit short-circuiting or leak.

↓ No

Check the Q1004 periphery circuit.

↓ Yes

Is the "H" pulse inputted into the base of Q1004? — No → Check or replace Q1004, D1046.

↓ Yes

Replace Q1004.

FLOW CHART NO.11

EV -19V is not outputted.

↓

Is -19V voltage supplied at the cathode of D1003? — No → Check the AT -24V line.

↓ Yes

Is voltage of -24V sent out from the anode of D1003? — Yes → Check for load circuit short-circuiting or leak.

↓ No

Check the D1003 periphery circuit.

↓ Yes

Replace D1003.

FLOW CHART NO.12

PON 3.3V(1), (2) is not outputted.

↓

Is 4V voltage supplied at emitter of Q1011? — No → Check the secondary circuit, AT 4V line.

↓ Yes

Is voltage of 3.3V sent out from collector of Q1011? — Yes → Check for load circuit short-circuiting or leak.

↓ No

Check the Q1011 periphery circuit.

↓ Yes

Does the P-CON switch circuit operate normally? (Q1005, Q1006, etc.) — No → Check each component and if poor the replace.

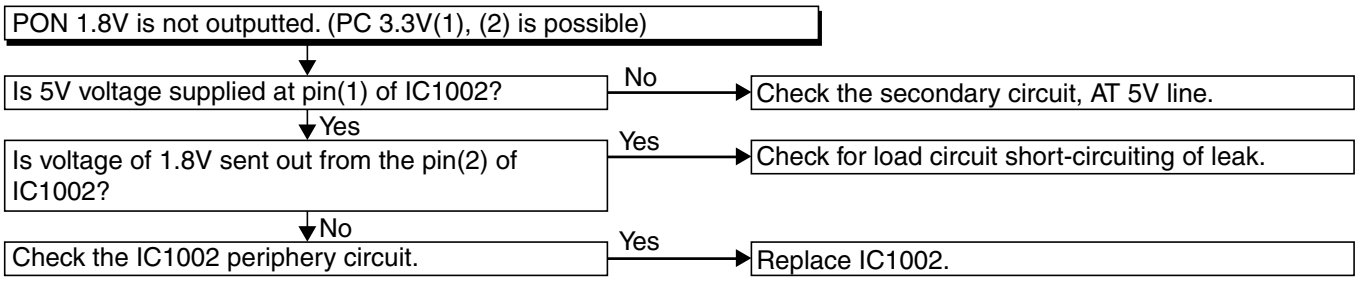
↓ Yes

Are the "H" pulse inputted into base of Q1011? — No → Check or replace Q1005, Q1006, Q1049.

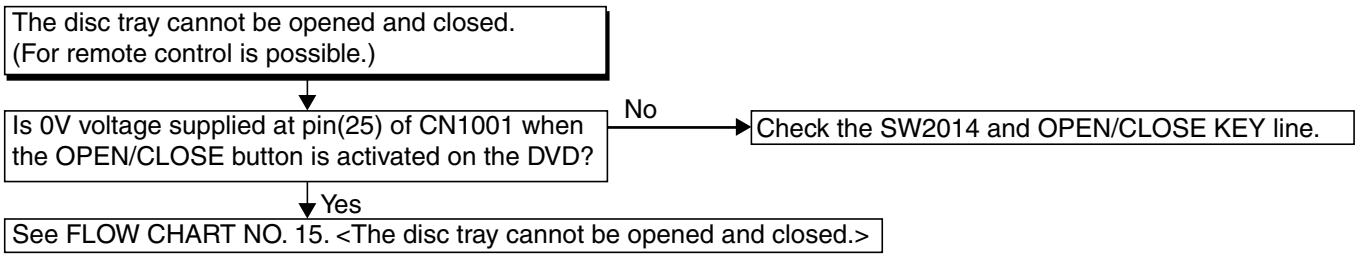
↓ Yes

Replace Q1011.

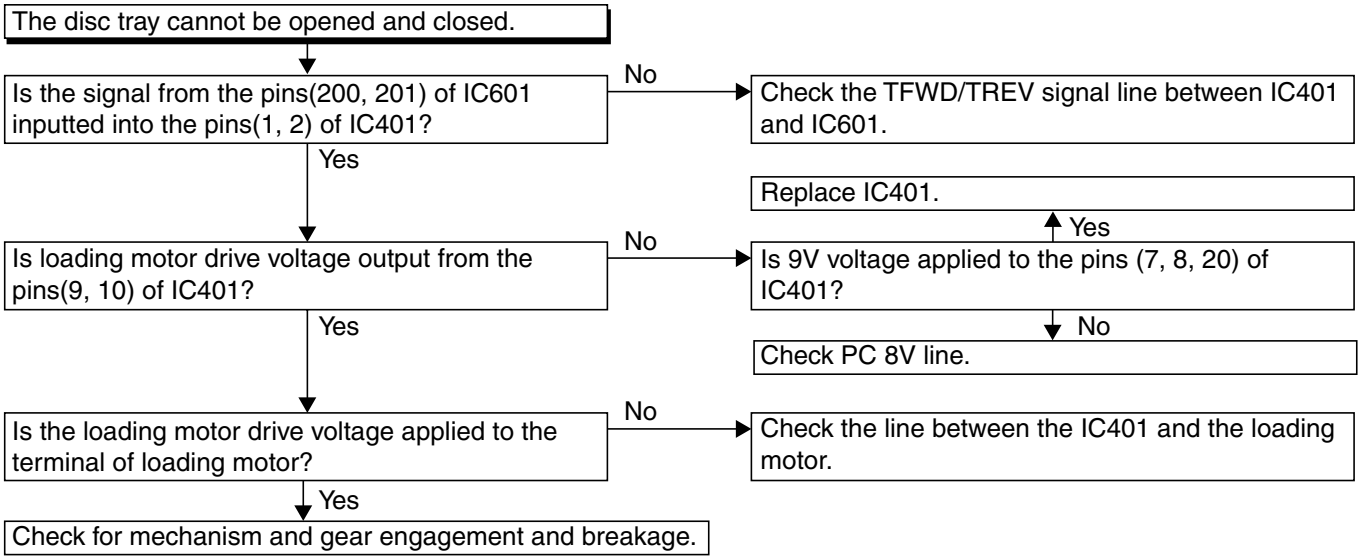
FLOW CHART NO.13


PON 1.8V is not outputted. (PC 3.3V(1), (2) is possible)
Is 5V voltage supplied at pin(1) of IC1002?
No
Check the secondary circuit, AT 5V line.
Yes
Is voltage of 1.8V sent out from the pin(2) of IC1002?
Yes
Check for load circuit short-circuiting of leak.
No
Check the IC1002 periphery circuit.
Yes
Replace IC1002.

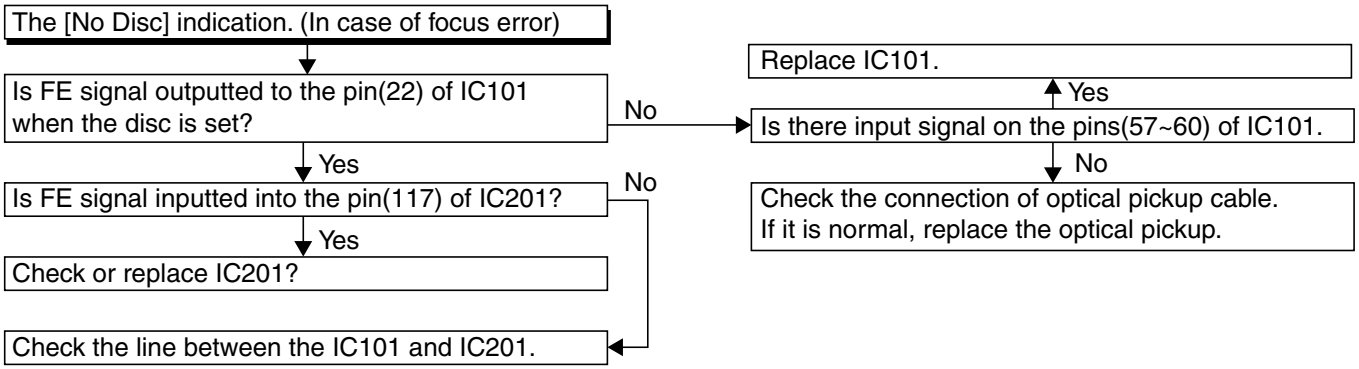
FLOW CHART NO.14


The disc tray cannot be opened and closed.
(For remote control is possible.)
Is 0V voltage supplied at pin(25) of CN1001 when the OPEN/CLOSE button is activated on the DVD?
No
Check the SW2014 and OPEN/CLOSE KEY line.
Yes
See FLOW CHART NO. 15. <The disc tray cannot be opened and closed.>

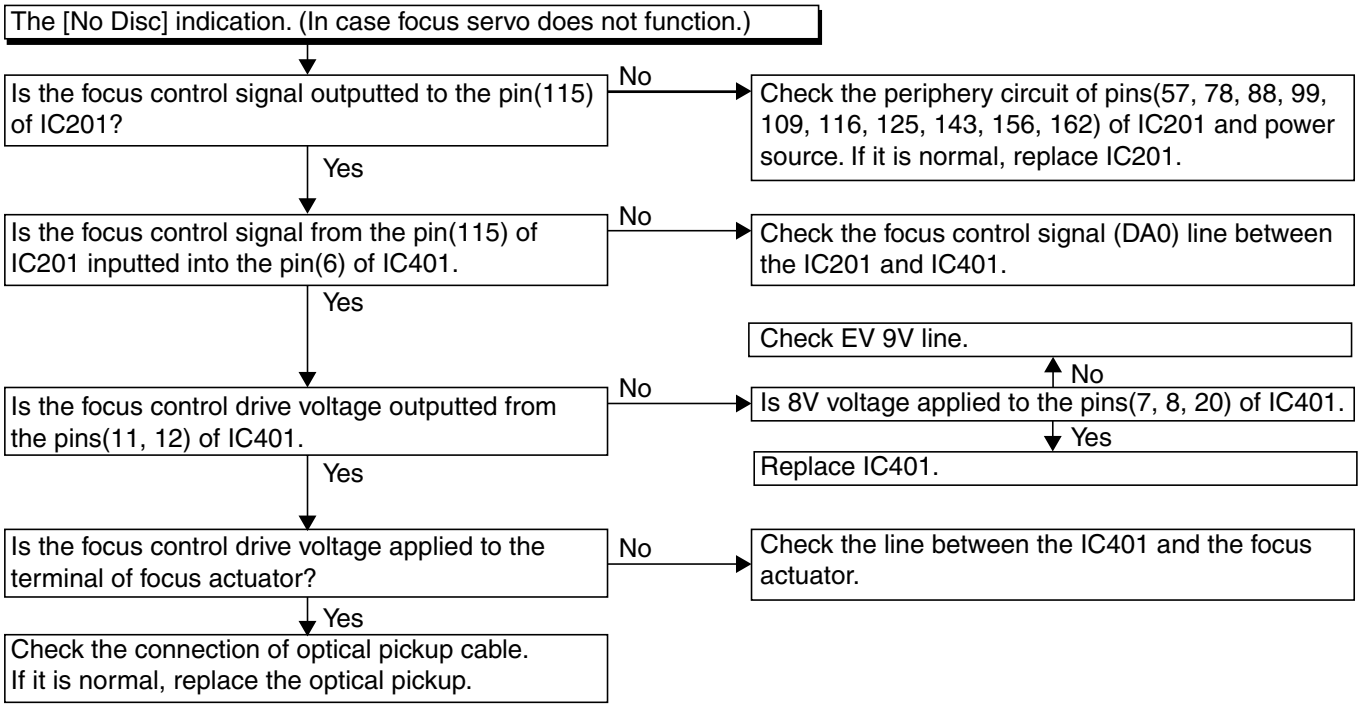
FLOW CHART NO.15


The disc tray cannot be opened and closed.
Is the signal from the pins(200, 201) of IC601 inputted into the pins(1, 2) of IC401?
No
Check the TFWD/TREV signal line between IC401 and IC601.
Yes
Replace IC401.
Yes
Is loading motor drive voltage output from the pins(9, 10) of IC401?
No
Is 9V voltage applied to the pins (7, 8, 20) of IC401?
Yes
No
Check PC 8V line.
Is the loading motor drive voltage applied to the terminal of loading motor?
No
Check the line between the IC401 and the loading motor.
Yes
Check for mechanism and gear engagement and breakage.

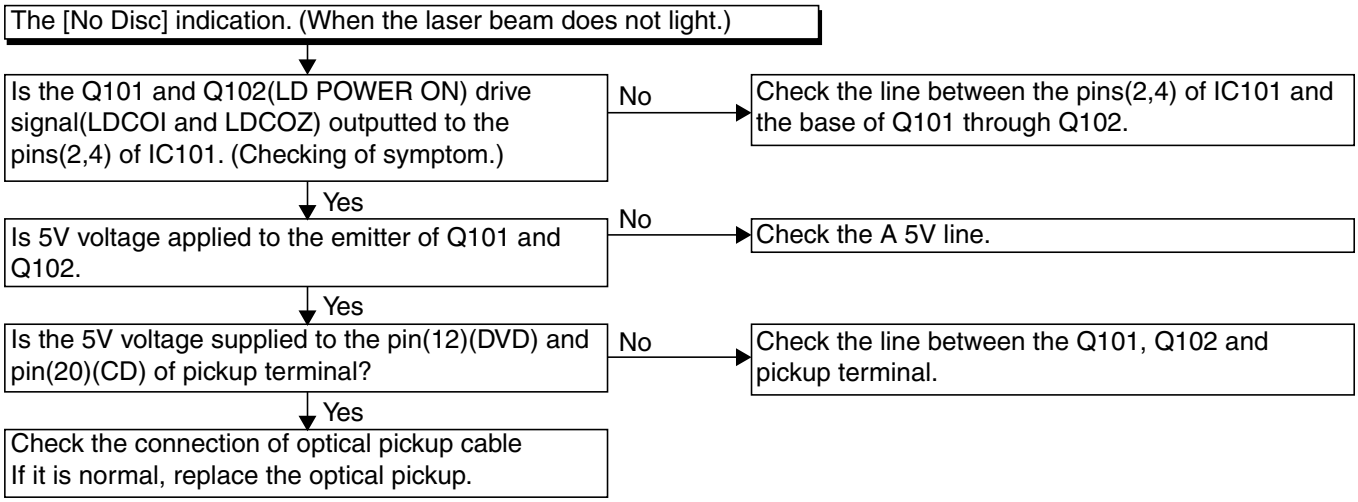
FLOW CHART NO.16


The [No Disc] indication. (In case of focus error)
Replace IC101.
Yes
Is FE signal outputted to the pin(22) of IC101 when the disc is set?
No
Is there input signal on the pins(57~60) of IC101.
Yes
No
Is FE signal inputted into the pin(117) of IC201?
No
Check the connection of optical pickup cable.
If it is normal, replace the optical pickup.
Yes
Check or replace IC201?
Check the line between the IC101 and IC201.

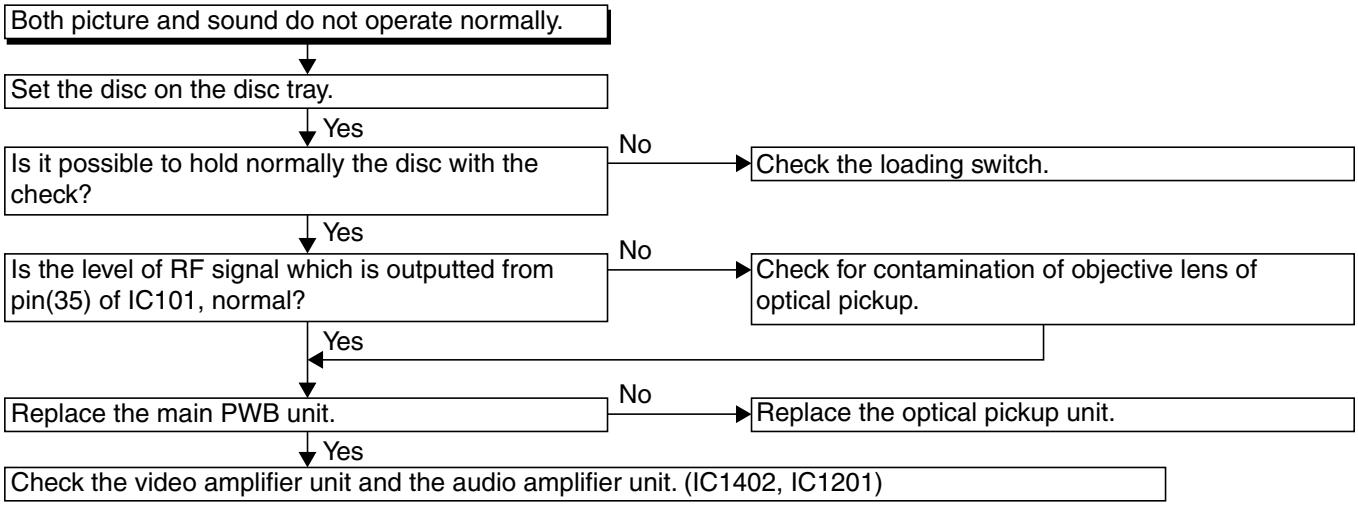
FLOW CHART NO.17


The [No Disc] indication. (In case focus servo does not function.)
Is the focus control signal outputted to the pin(115) of IC201?
No
Check the periphery circuit of pins(57, 78, 88, 99, 109, 116, 125, 143, 156, 162) of IC201 and power source. If it is normal, replace IC201.
Yes
Is the focus control signal from the pin(115) of IC201 inputted into the pin(6) of IC401.
No
Check the focus control signal (DA0) line between the IC201 and IC401.
Yes
Check EV 9V line.
No
Is the focus control drive voltage outputted from the pins(11, 12) of IC401.
No
Is 8V voltage applied to the pins(7, 8, 20) of IC401.
Yes
Replace IC401.
Yes
Is the focus control drive voltage applied to the terminal of focus actuator?
No
Check the line between the IC401 and the focus actuator.
Yes
Check the connection of optical pickup cable.
If it is normal, replace the optical pickup.

FLOW CHART NO.18


The [No Disc] indication. (When the laser beam does not light.)
Is the Q101 and Q102(LD POWER ON) drive signal(LDCOI and LDCOZ) outputted to the pins(2,4) of IC101. (Checking of symptom.)
No
Check the line between the pins(2,4) of IC101 and the base of Q101 through Q102.
Yes
Is 5V voltage applied to the emitter of Q101 and Q102.
No
Check the A 5V line.
Yes
Is the 5V voltage supplied to the pin(12)(DVD) and pin(20)(CD) of pickup terminal?
No
Check the line between the Q101, Q102 and pickup terminal.
Yes
Check the connection of optical pickup cable
If it is normal, replace the optical pickup.

FLOW CHART NO.19


Both picture and sound do not operate normally.
Set the disc on the disc tray.
Yes
Is it possible to hold normally the disc with the check?
No
Check the loading switch.
Yes
Is the level of RF signal which is outputted from pin(35) of IC101, normal?
No
Check for contamination of objective lens of optical pickup.
Yes
Replace the main PWB unit.
No
Replace the optical pickup unit.
Yes
Check the video amplifier unit and the audio amplifier unit. (IC1402, IC1201)

FLOW CHART NO.20

Picture do not operate normally.

↓

Set the disc on the disc tray.

↓ Yes

Are the video signals outputted to each pins of main unit connector CN701?

CN701	7PIN	CVBS
CN701	5PIN	S-Y
CN701	6PIN	S-C

No → Check the main unit. (IC601 periphery circuit.)

Are the video signals shown above input into each pins of IC1402?

IC1402	4PIN	CVBS
IC1402	6PIN	S-Y
IC1402	2PIN	S-C

No → Check the line between each pins of main unit connector CN701 and each pins of IC1402.

CN701	7PIN →	IC1402	4PIN	CVBS
CN701	5PIN →	IC1402	6PIN	S-Y
CN701	9PIN →	IC1402	2PIN	S-C

↓ Yes

Are the video signals outputted to each pins of IC1402?

IC1402	30PIN	CVBS
IC1402	27PIN	S-Y
IC1402	33PIN	S-C

No → Is 5V voltage applied to the pin(1, 3, 5, 34) of IC1402?

↓ Yes

Check or replace IC1402?

↓ Yes

Are the video signals outputted to the specific output terminal?

Are the composite video signals outputted to the VIDEO OUT terminal (JK1403)?

No → Check the peripheral circuit of JK1403 from the pin (30) of IC1402.

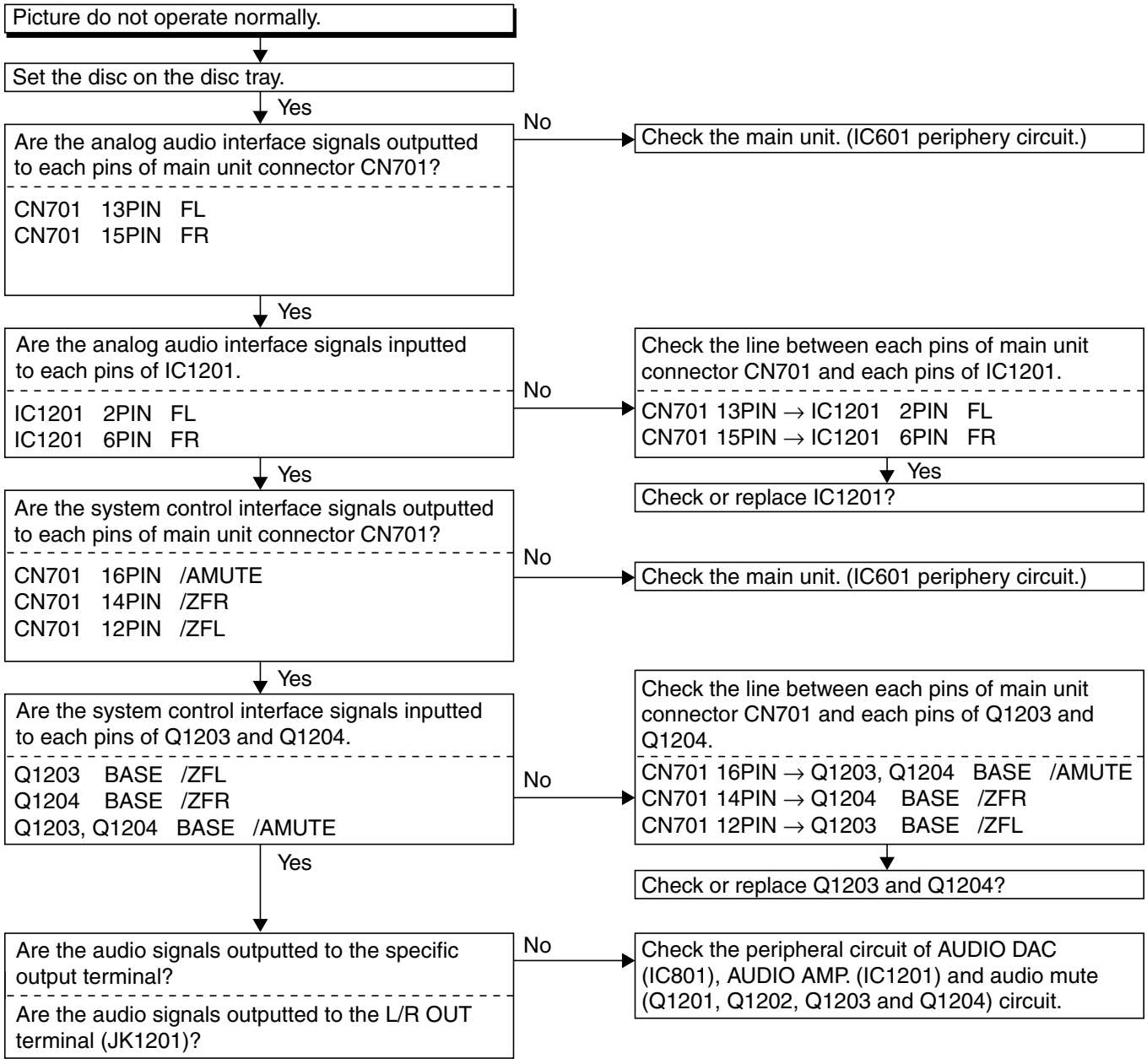
Are the luminance signals outputted to the S-OUT terminal (JK1401)?

No → Check the peripheral circuit of JK1401 from the pin (27) of IC1402.

Are the chroma signals outputted to the S-OUT terminal (JK1401)?

No → Check the peripheral circuit of JK1401 from the pin (33) of IC1402.

FLOW CHART NO.21

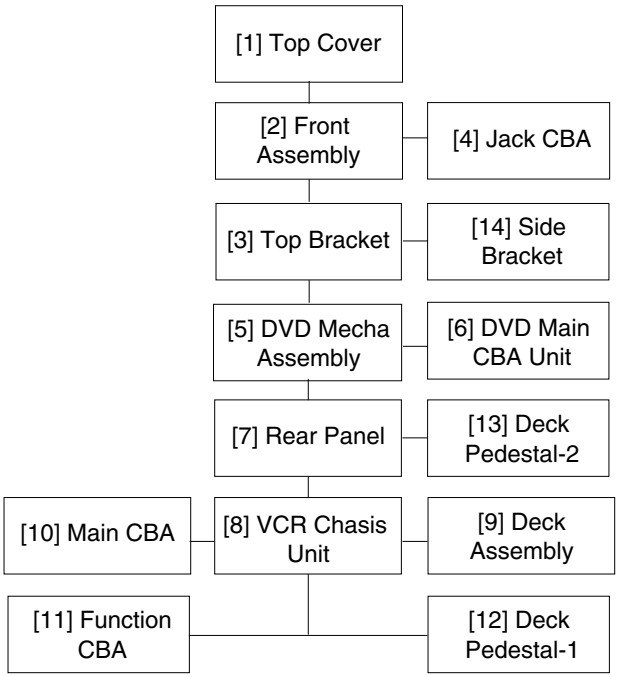

Picture do not operate normally.
Set the disc on the disc tray.
Yes
Are the analog audio interface signals outputted to each pins of main unit connector CN701?
CN701 13PIN FL
CN701 15PIN FR
No
Check the main unit. (IC601 periphery circuit.)
Yes
Are the analog audio interface signals inputted to each pins of IC1201.
IC1201 2PIN FL
IC1201 6PIN FR
No
Check the line between each pins of main unit connector CN701 and each pins of IC1201.
CN701 13PIN → IC1201 2PIN FL
CN701 15PIN → IC1201 6PIN FR
Yes
Check or replace IC1201?
Yes
Are the system control interface signals outputted to each pins of main unit connector CN701?
CN701 16PIN /AMUTE
CN701 14PIN /ZFR
CN701 12PIN /ZFL
No
Check the main unit. (IC601 periphery circuit.)
Yes
Are the system control interface signals inputted to each pins of Q1203 and Q1204.
Q1203 BASE /ZFL
Q1204 BASE /ZFR
Q1203, Q1204 BASE /AMUTE
No
Check the line between each pins of main unit connector CN701 and each pins of Q1203 and Q1204.
CN701 16PIN → Q1203, Q1204 BASE /AMUTE
CN701 14PIN → Q1204 BASE /ZFR
CN701 12PIN → Q1203 BASE /ZFL
Check or replace Q1203 and Q1204?
Yes
Are the audio signals outputted to the specific output terminal?
Are the audio signals outputted to the L/R OUT terminal (JK1201)?
No
Check the peripheral circuit of AUDIO DAC (IC801), AUDIO AMP. (IC1201) and audio mute (Q1201, Q1202, Q1203 and Q1204) circuit.

CHAPTER 2 DISASSEMBLY AND ADJUSTMENT

CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[1]	Top Cover	D1	7(S-1)	-
[2]	Front Assembly	D2	*CN505, *2(L-1), Tray Panel, *7(L-2)	1-1 1-2 1-3 1-4 1-5 1-6 1-7
[3]	Top Bracket	D2	4(S-2)	-
[4]	Jack CBA	D3	3(S-3)	-
[5]	DVD Mecha Assembly	D4	3(S-4), *CN501, *CN701	-
[6]	DVD Main CBA Unit	D5	3(S-5), *CN101, *CN401	2 2-1 2-2 2-3 3
[7]	Rear Panel	D6	5(S-6), 3(S-7)	-
[8]	VCR Chassis Unit	D7	5(S-8), 6(S-9)	-
[9]	Deck Assembly	D8	Desolder, 2(S-10)	4,5
[10]	Main CBA	D8	----------	-
[11]	Function CBA	D8	Desolder	-
[12]	Deck Pedestal-1	D9	6(S-11)	-
[13]	Deck Pedestal-2	D9	(S-12)	-
[14]	Side Bracket	D9	(S-13)	-
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)

Note:

(1): Identification (location) No. of parts in the figures

(2): Name of the part

(3): Figure Number for reference

(4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw, CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

(5): Refer to “Reference Notes.”

Reference Notes

CAUTION 1: Locking Tabs (L-1) and (L-2) are fragile. Be careful not to break them.

1-1. Connect the wall plug to an AC outlet and press the OPEN/CLOSE button to open the Tray.

1-2. Remove the Tray Panel by releasing two Locking Tabs (L-1).

1-3. Press the OPEN/CLOSE button again to close the Tray.

1-4. Press the POWER button to turn the power off.

1-5. Unplug an AC cord.

1-6. Disconnect connector CN505.

1-7. Release seven Locking Tabs (L-2) (to do this, first release five Locking Tabs (A) at the side and top, and then release two Locking Tabs (B) at the bottom.)

CAUTION 2: Electrostatic breakdown of the laser diode in the optical system block may occur as a potential difference caused by electrostatic charge accumulated on cloth, human body etc., during unpacking or repair work.

To avoid damage of pickup follow next procedures.

2-1. Slide the pickup unit as shown in Fig. D5.

2-2. Short the three short lands of FPC cable with solder before removing the FFC cable (CN101) from it. If you disconnect the FFC cable (CN101), the laser diode of pickup will be destroyed. (Fig. D5)

2-3. Disconnect Connector (CN401). Remove three Screws (S-5) and lift the DVD Main CBA Unit. (Fig. D5)

CAUTION 3: When reassembling, confirm the FFC cable (CN101) is connected completely. Then remove the solder from the three short lands of FPC cable. (Fig. D5)

4. When reassembling, solder wire jumpers as shown in Fig. D8.

5. Before installing the Deck Assembly, be sure to place the pin of LD-SW on Main CBA as shown in Fig. D8. Then, install the Deck Assembly while aligning the hole of Cam Gear with the pin of LD-SW, the shaft of Cam Gear with the hole of LD-SW as shown in Fig. D8.

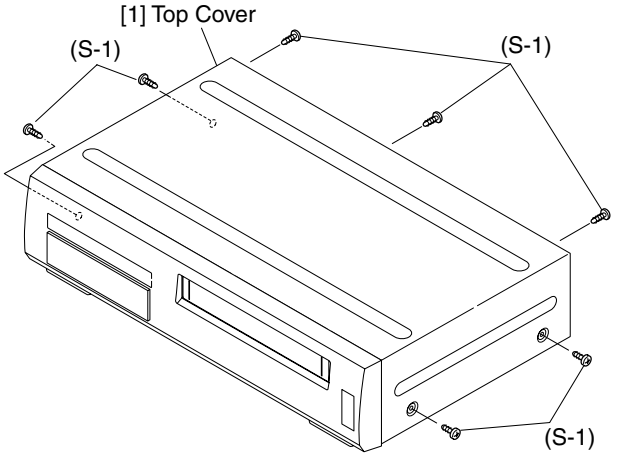


Fig. D1

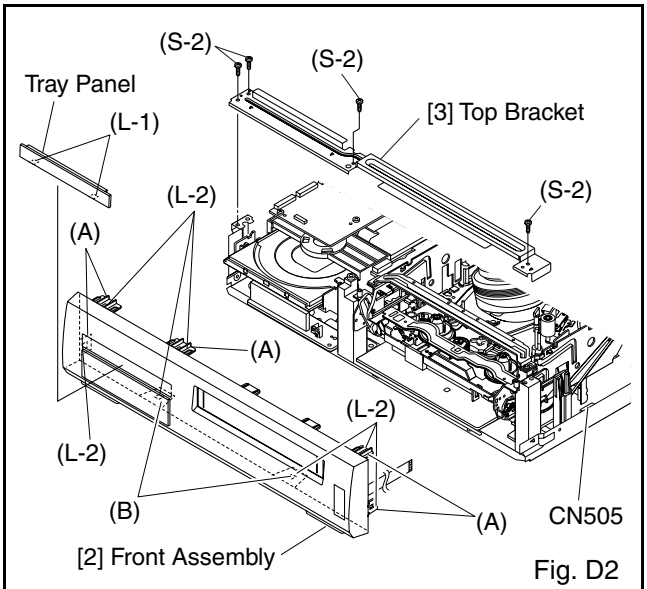


Fig. D2

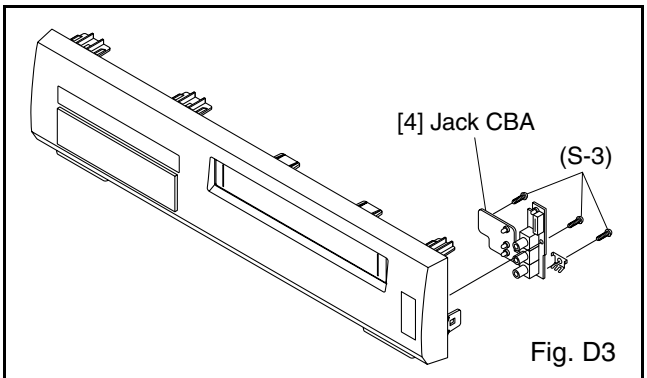


Fig. D3

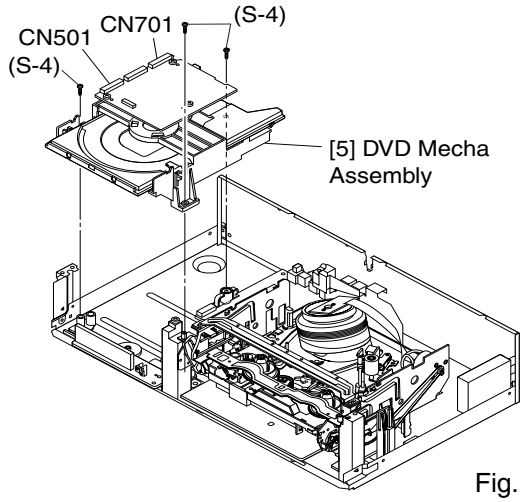


Fig. D4

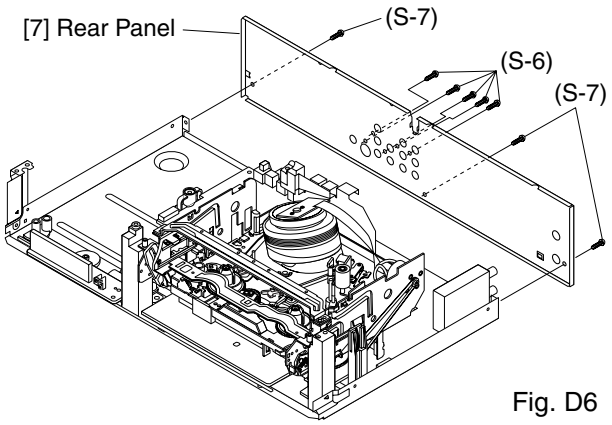
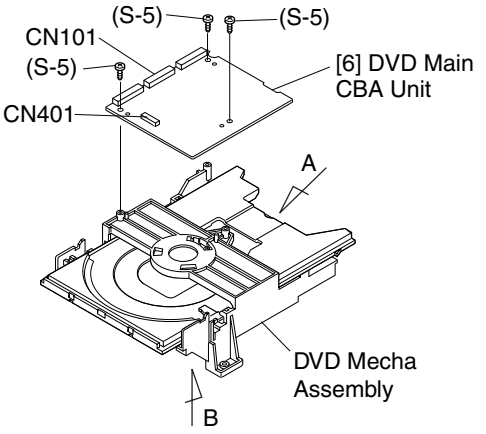
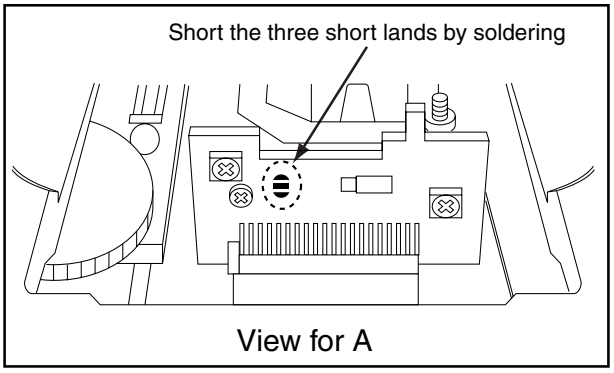


Fig. D6





OR

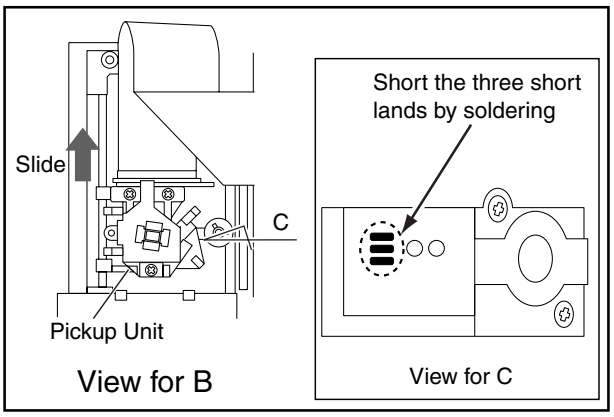
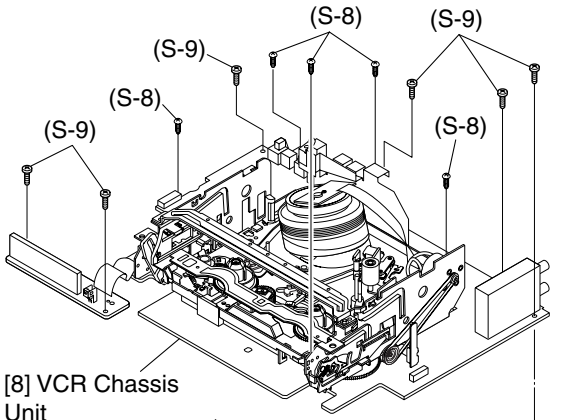


Fig. D5



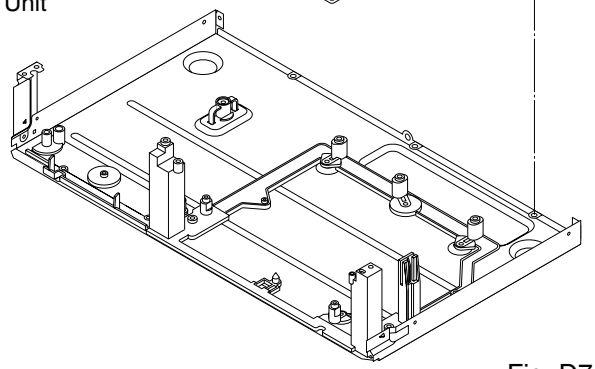
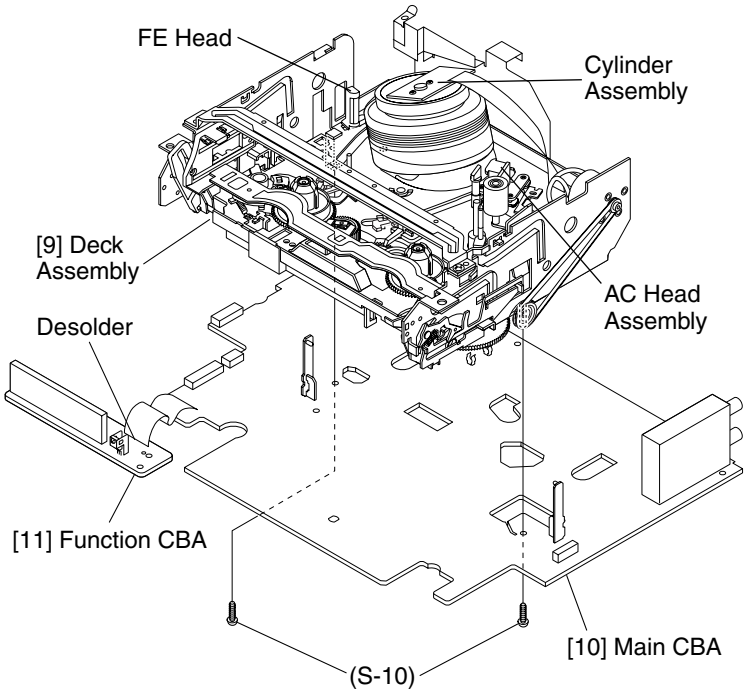
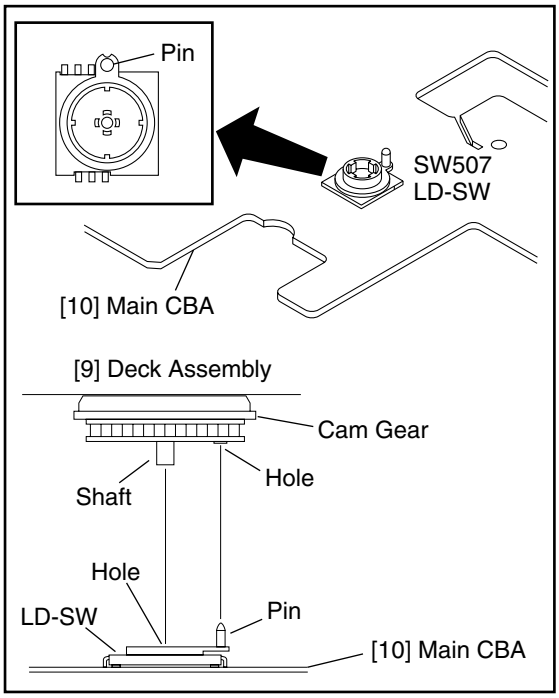
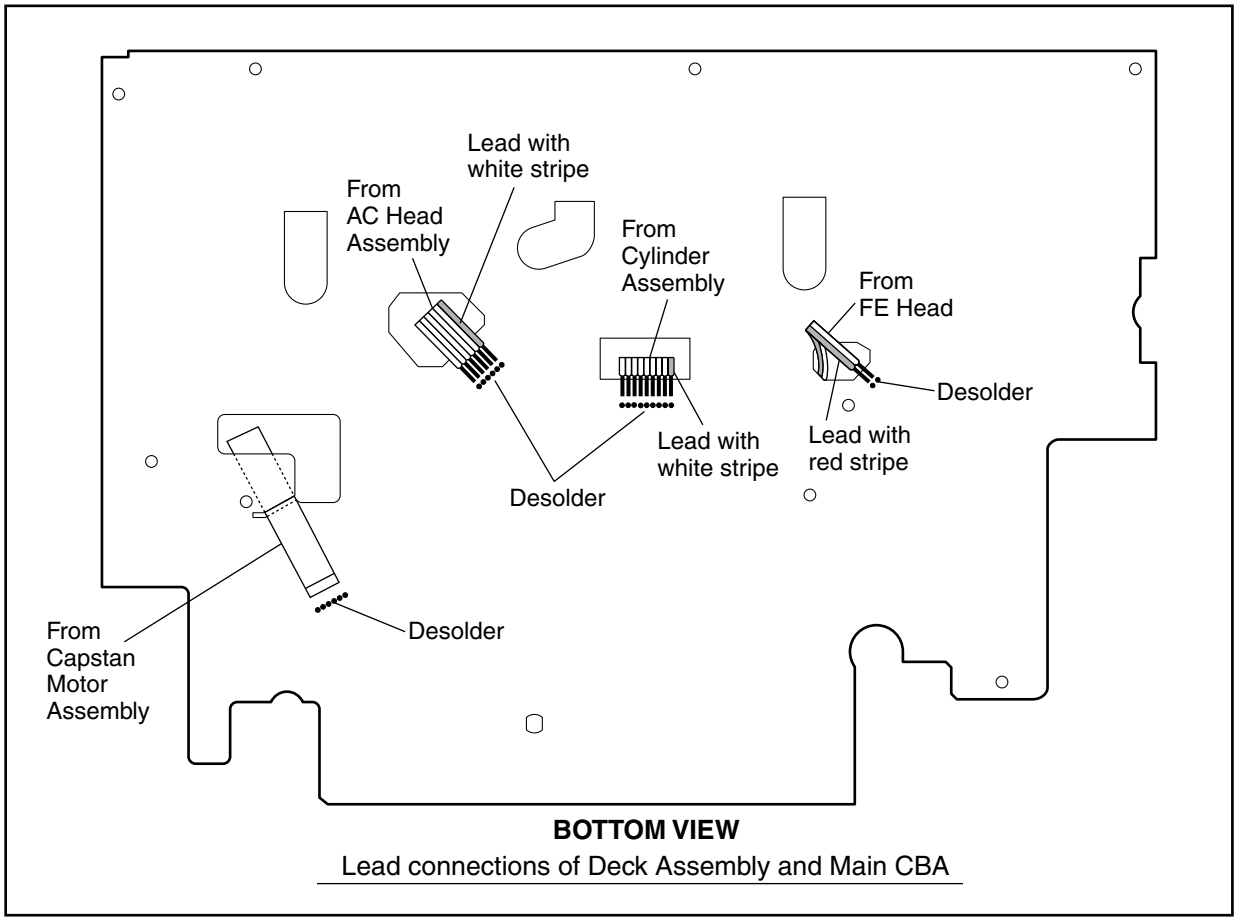


Fig. D7







BOTTOM VIEW

Lead connections of Deck Assembly and Main CBA

Fig. D8

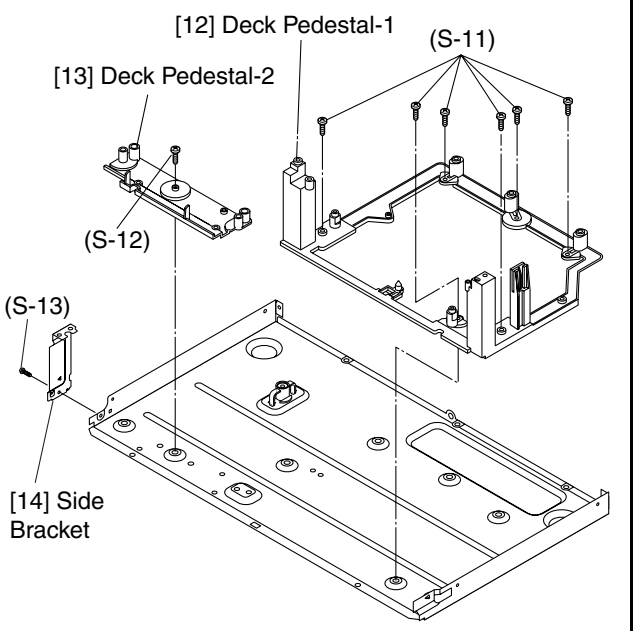
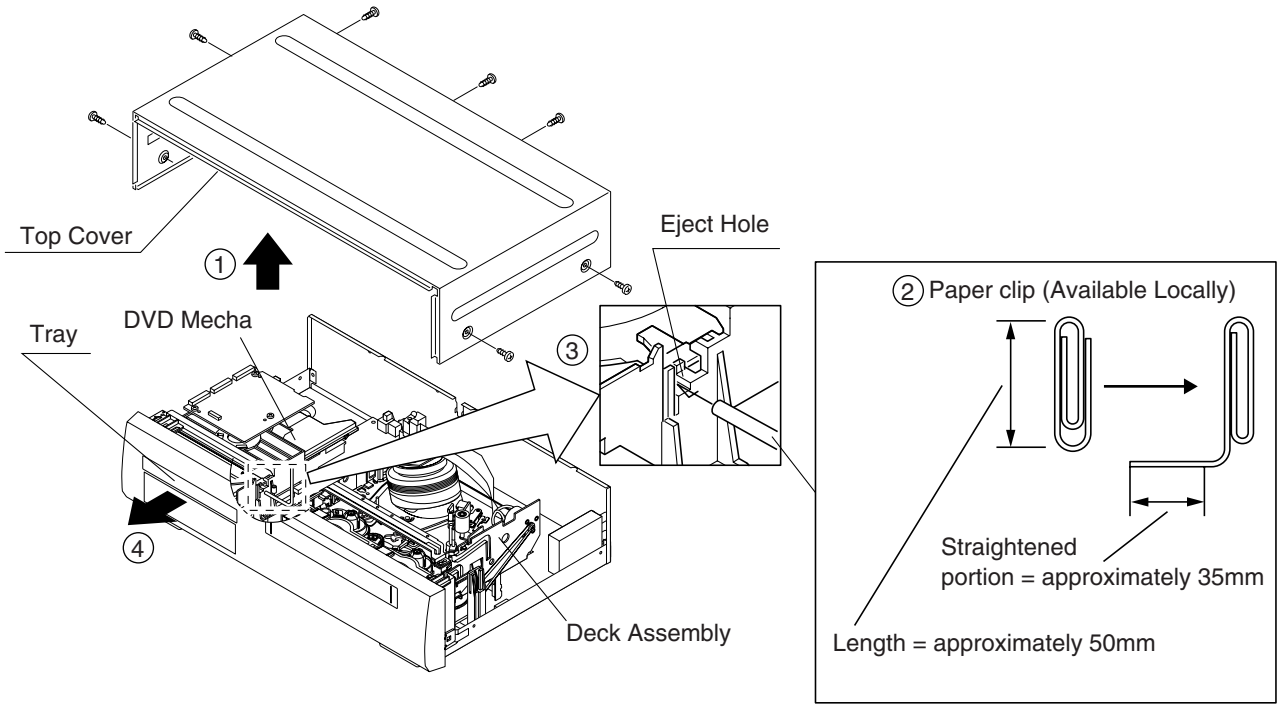


Fig. D9

HOW TO MANUAL EJECT

1. Remove the Top Case.
2. Make a tool from a paper clip, etc., (length = approximately 50 mm, maximum diameter = approximately 3 mm) as shown below.
3. Insert the tool into the manual eject hole on the DVD Mecha. Then, push it until the tray is ejected.



DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Before following the procedures described below, be sure to remove the deck assembly from the cabinet. (Refer to CABINET DISASSEMBLY INSTRUCTIONS on page 2-1-1.)
All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [41] and [42] in Fig.DM1 on page 2-2-3. When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Guide Holder A	T	DM3	2(S-1)	
[2]	[1]	Cassette Holder Assembly	T	DM4		
[3]	[2]	Slider L	T	DM5	(S-2)	
[4]	[2]	Slider R	T	DM5	(S-3)	
[5]	[4]	Lock Lever	T	DM5	(S-4),*(P-1)	
[6]	[2]	C Plate	T	DM5		
[7]	[7]	Cylinder Assembly	T	DM1,DM6	Desolder, 3(S-5)	
[8]	[8]	Loading Motor Assembly	T	DM1,DM7	Desolder, LDG Belt, 2(S-6)	
[9]	[9]	AC Head Assembly	T	DM1,DM7	(S-7)	
[10]	[2]	Tape Guide Assembly	T	DM1,DM8	*(P-2)	
[11]	[10]	Door Opener B	T	DM1,DM8	*(L-1),*(L-2)	
[12]	[11]	Pinch Arm (B)	T	DM1,DM8	*(P-3)	
[13]	[12]	Pinch Arm (A) Assembly	T	DM1,DM8		
[14]	[14]	FE Head	T	DM1,DM9	(S-8)	
[15]	[15]	Prism	T	DM1,DM9	(S-9)	
[16]	[2]	Slider Shaft	T	DM10	(S-10),*(L-3)	
[17]	[16]	C Drive Lever L	T	DM10		
[18]	[16]	C Drive Lever R	T	DM10		
[19]	[7],[10]	Capstan Motor	B	DM2,DM11	3(S-11), Cap Belt	
[20]	[20]	Clutch Assembly	B	DM2,DM12	(C-1)	
[21]	[20]	FF Arm	B	DM2,DM12		
[22]	[22]	Cam Holder F	B	DM2,DM13	(C-2)	
[23]	[23]	Cam Gear (B)	B	DM2,DM13	(C-3),*(P-4)	
[24]	[24]	Mode Gear	B	DM2,DM14	(C-4)	
[25]	[20],[23], [24]	Mode Lever	B	DM2,DM14	(C-5), *(L-4)	
[26]	[22]	Worm Holder	B	DM2,DM14	(S-12)	
[27]	[26]	Pully Assembly	B	DM2,DM14		
[28]	[25],[26]	Cam Gear (A)	B	DM2,DM14		
[29]	[25]	Idler Assembly	B	DM1,DM15	*(L-5)	
[30]	[25]	BT Arm	B	DM2,DM15	*(P-5)	
[31]	[25]	Loading Arm S (B) Assembly	B	DM2,DM15		(+)Refer to Alignment Sec.Pg.2-3-1
[32]	[31]	Loading Arm T (B) Assembly	B	DM2,DM15		(+)Refer to Alignment Sec.Pg.2-3-1

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[33]	[2],[25]	M Brake T Assembly	T	DM1,DM16	*(P-6)	
[34]	[2],[25]	M Brake S Assembly	T	DM1,DM16	*(P-7)	
[35]	[34]	Tension Lever Sub Assembly	T	DM1,DM16		
[36]	[35]	T Lever Holder	T	DM1,DM16	*(L-6)	
[37]	[33]	M Gear	T	DM1,DM16	(C-6)	
[38]	[2],[15]	Sensor Gear	T	DM1,DM16	(C-7)	
[39]	[33]	Reel T	T	DM1,DM16		
[40]	[35]	Reel S	T	DM1,DM16		
[41]	[31],[35]	Moving Guide S Preparation	T	DM1,DM17		
[42]	[32]	Moving Guide T Preparation	T	DM1,DM17		
[43]	[19]	TG Post Assembly	T	DM1,DM17	*(L-7)	
[44]	[19],[28]	Rack Assembly	R	DM18		(+)Refer to Alignment Sec.Pg.2-3-2
[45]	[44]	F Door Opener	R	DM18		
*[46]	[46]	Cleaner Lever Assembly	T	DM1,DM6		Type A
					*(L-8)	Type B
*[47]	[46]	CL Post	T	DM6	*(L-9)	Type A
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)	↓ (6)	↓ (7)

(1): Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as Identification (location) No. of parts in the figures.

(2): Indicates the part to start disassembling with in order to disassemble the part in column (1).

(3): Name of the part

(4): Location of the part: T=Top B=Bottom R=Right L=Left

(5): Figure Number

(6): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder
e.g., 2(L-2) = two Locking Tabs (L-2).

(7): Adjustment Information for Installation
(+):Refer to Deck Exploded Views for lubrication.

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* In case of some models, the Cleaner Lever Assembly is not used.

Top View

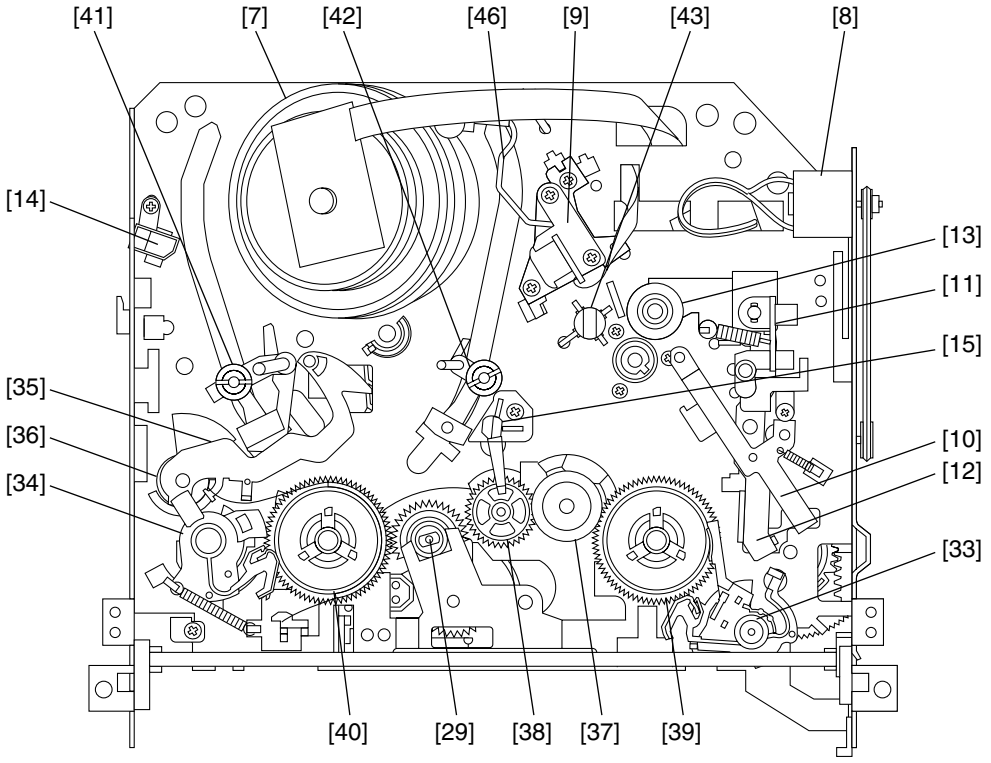


Fig. DM1

Bottom View

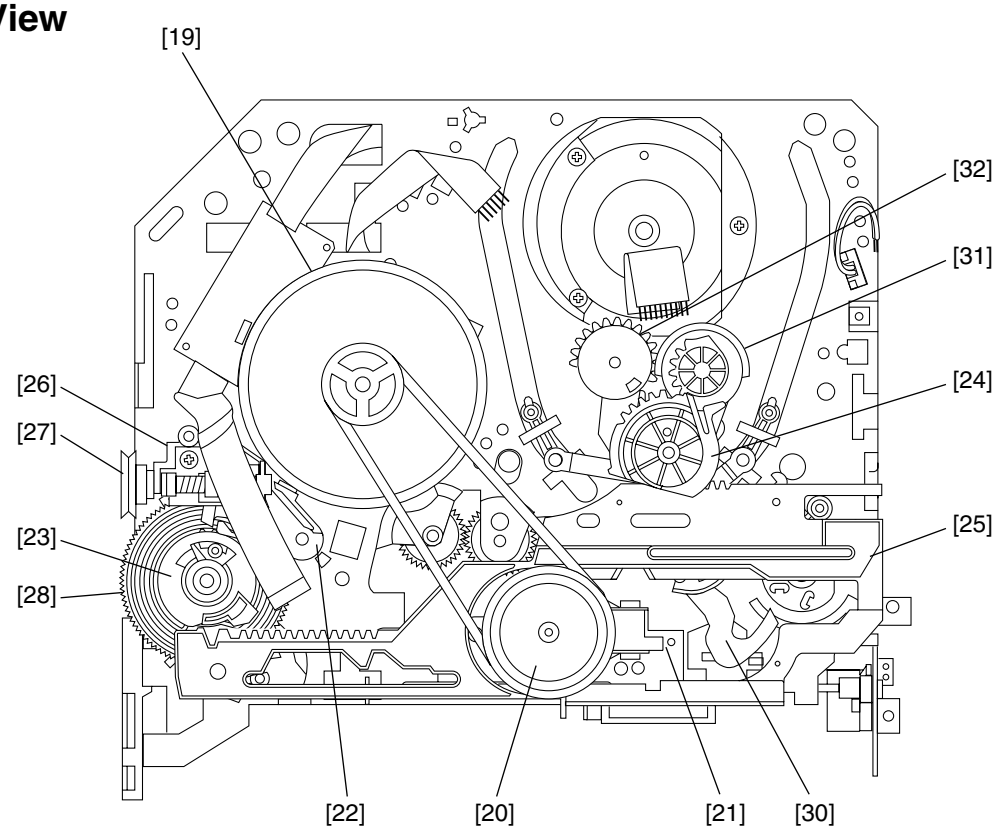


Fig. DM2

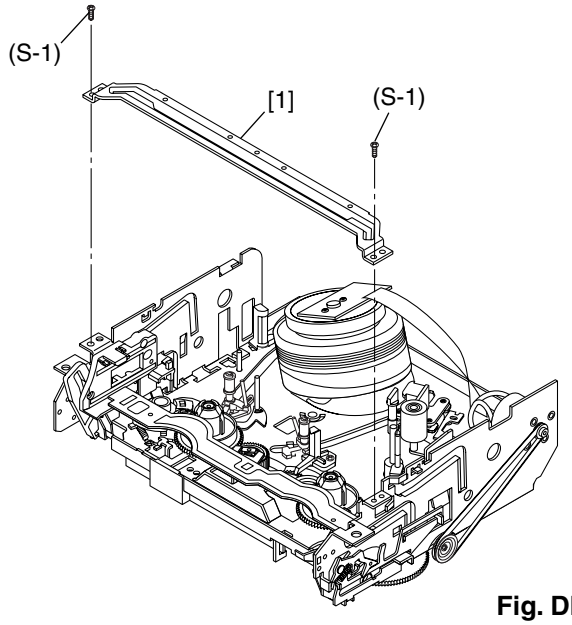


Fig. DM3

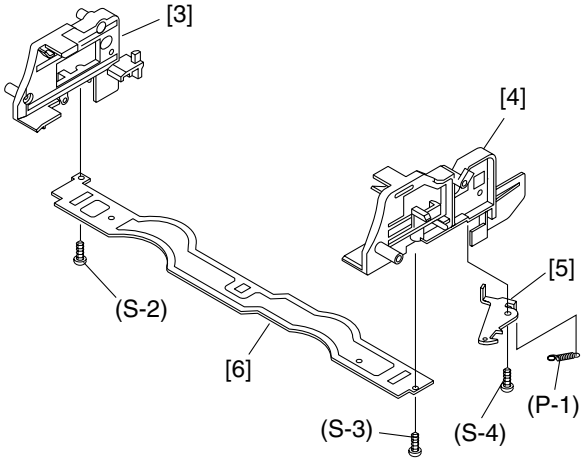
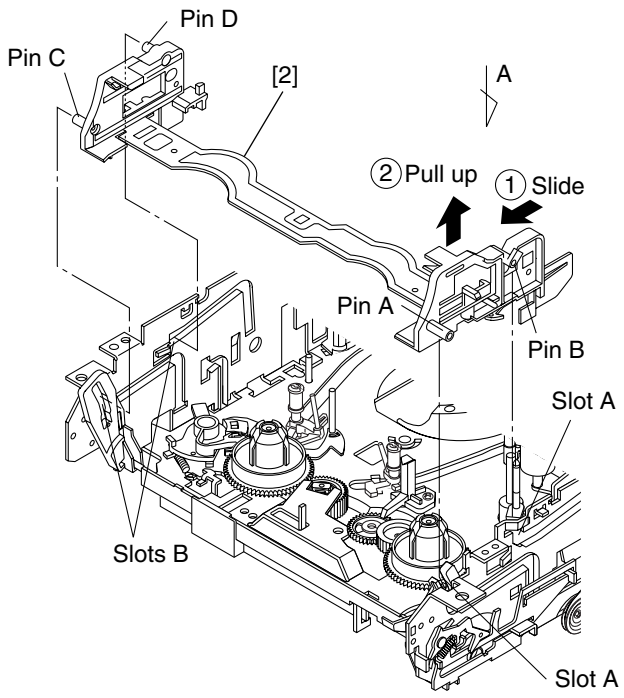


Fig. DM5



First, while pushing the locking tab as shown in the right, slide and pull up the right side on [2] to release Pin A and Pin B from the slots A.
Then, remove Pin C and Pin D on [2] from the slots B as shown.

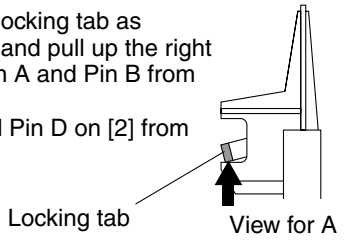
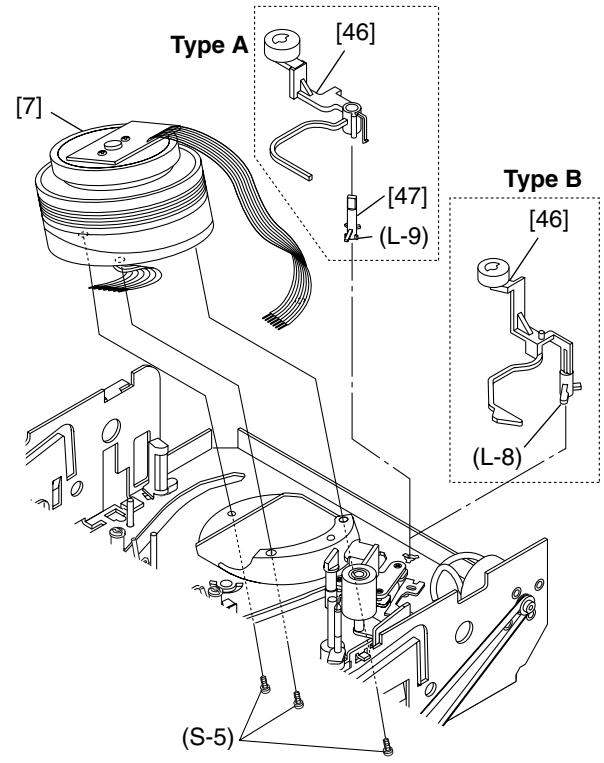


Fig. DM4



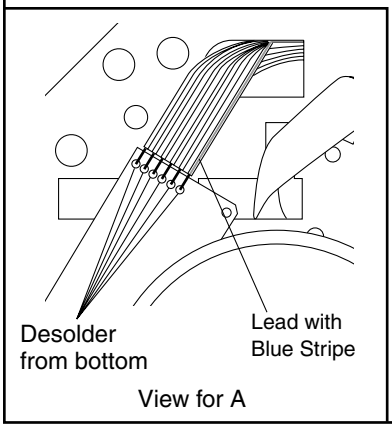


Fig. DM6

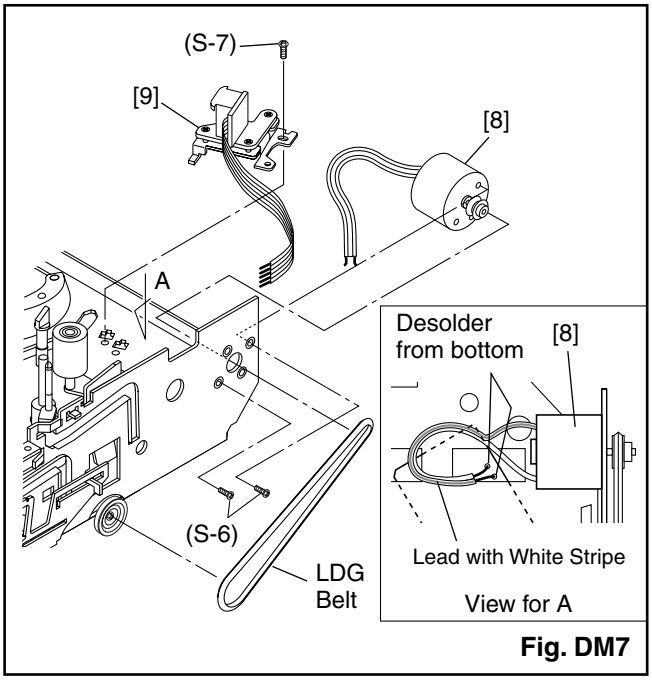


Fig. DM7

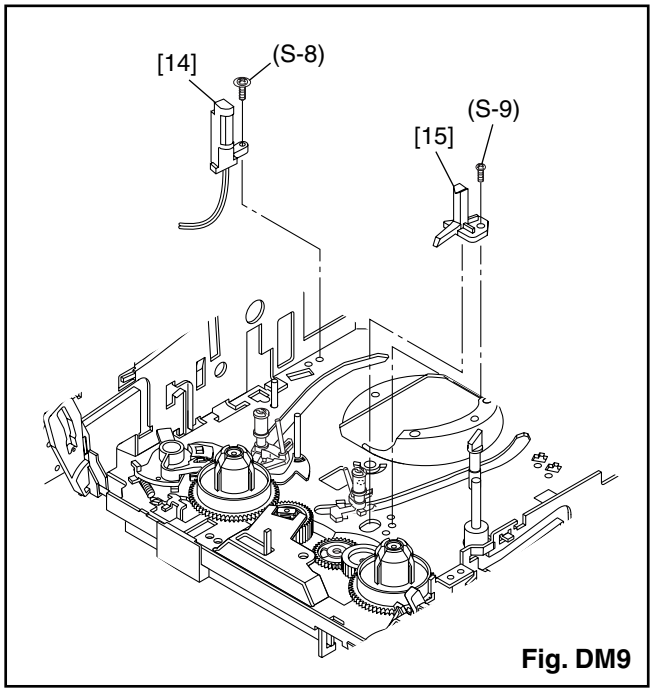


Fig. DM9

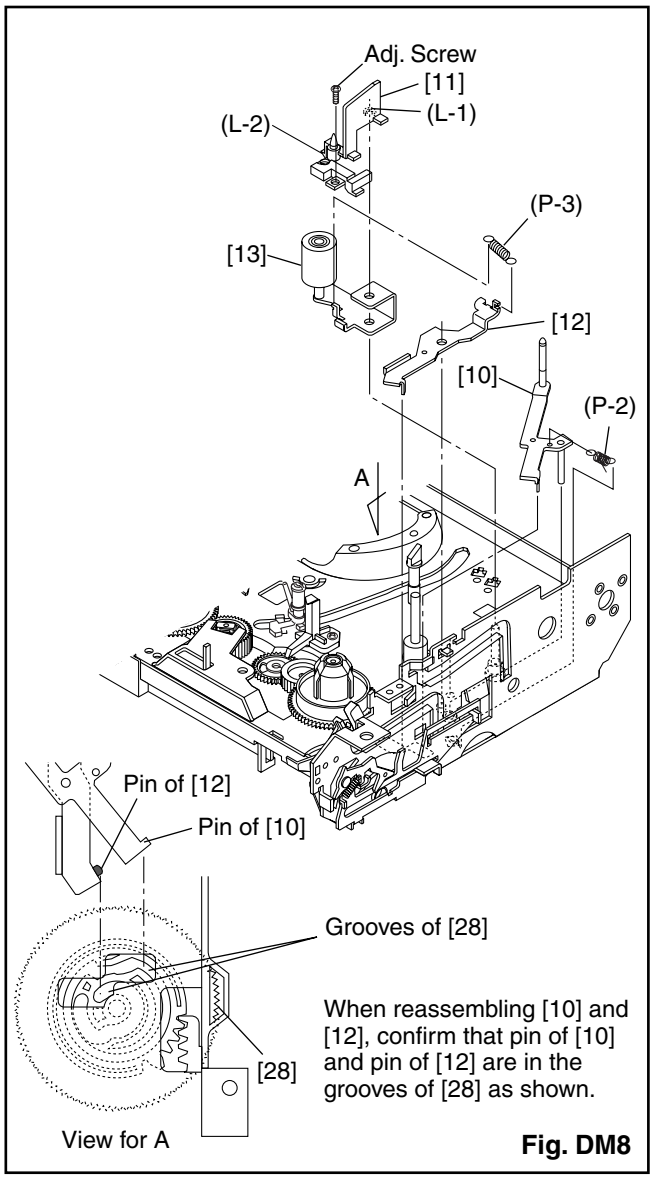


Fig. DM8

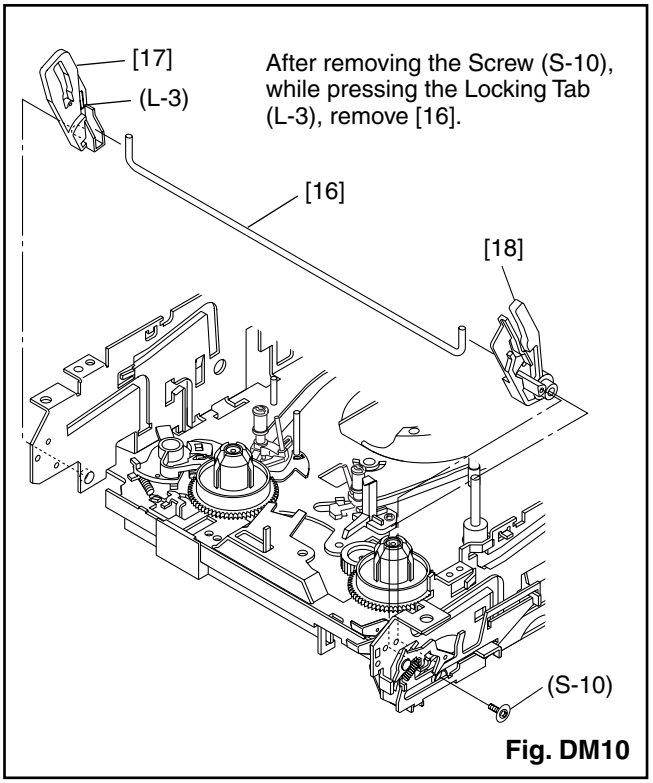


Fig. DM10

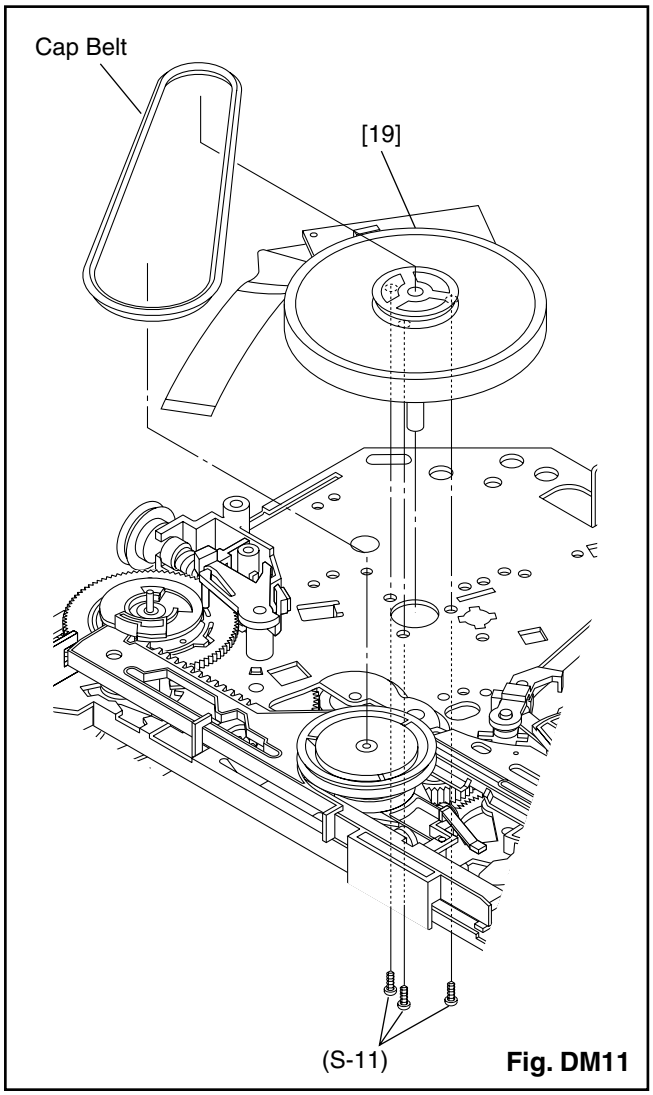


Fig. DM11

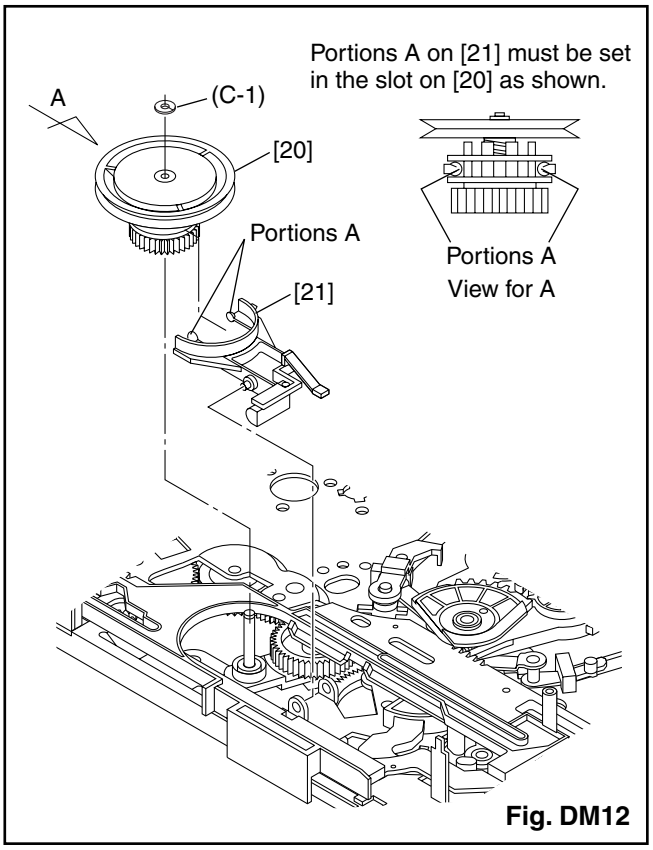
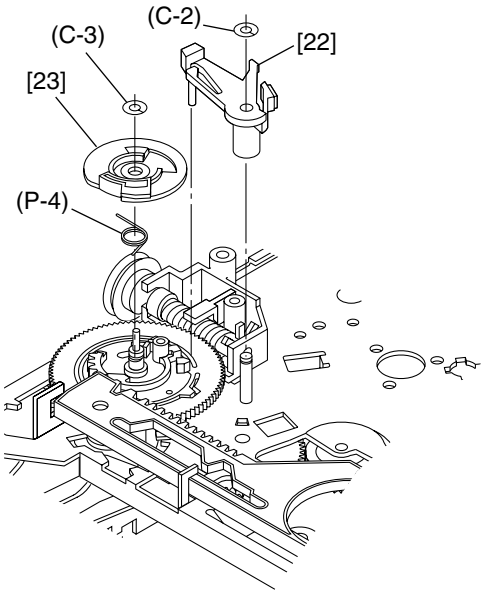
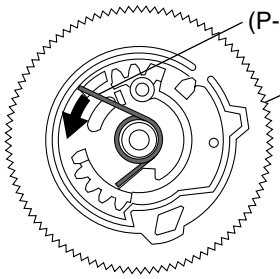


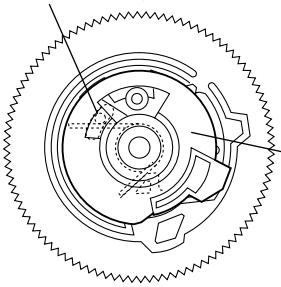
Fig. DM12



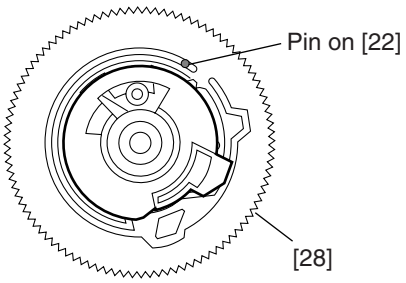


Pin on bottom of [23]

When installing [23], install the spring (P-4) to [28] as shown in the left figure, and then install [23] while pressing the spring (P-4) to the direction of the arrow in the left figure and confirming that the position of the spring (P-4) is placed as shown in the left figure.

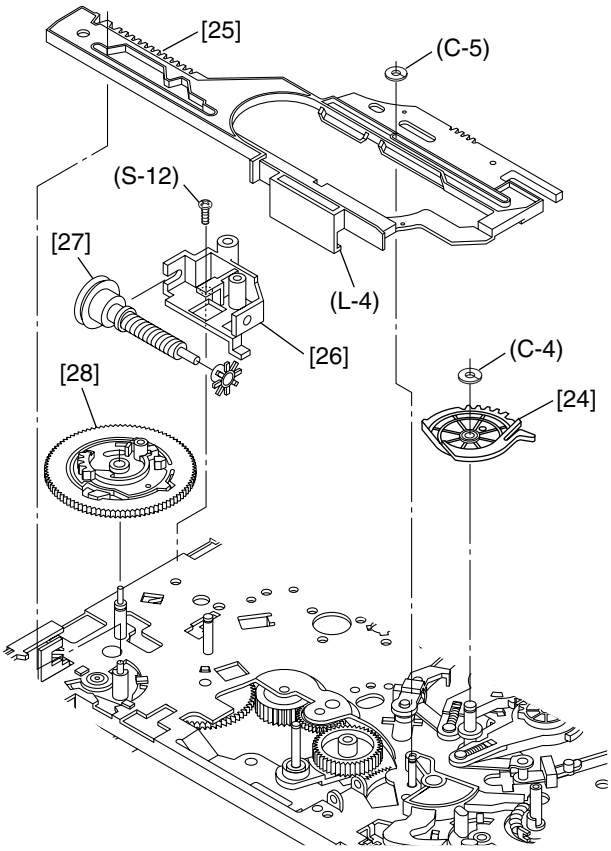


Top View

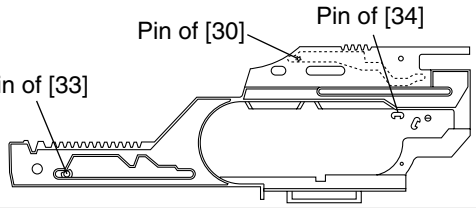


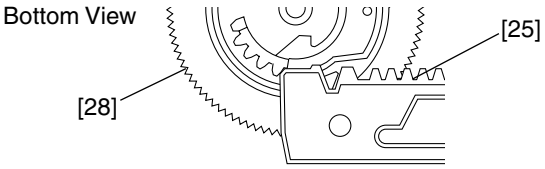
Position of pin on [22]

Fig. DM13

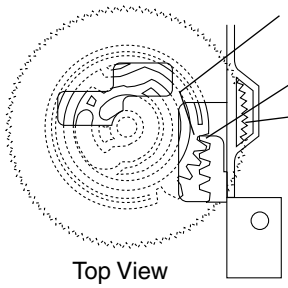


Position of Mode Lever when installed





Align [25] and [28] as shown.



When reassembling [28], meet the first groove on [28] to the first tooth on [44] as shown.

Top View

Fig. DM14

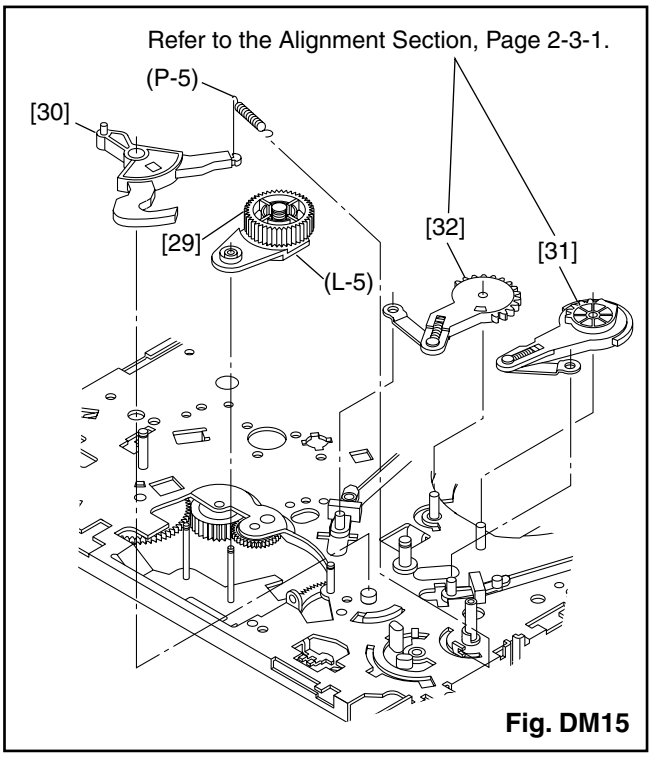


Fig. DM15

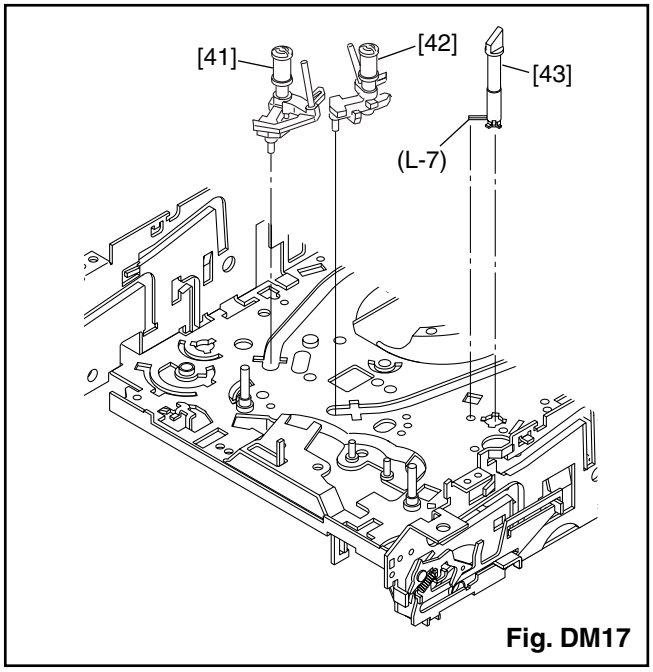


Fig. DM17

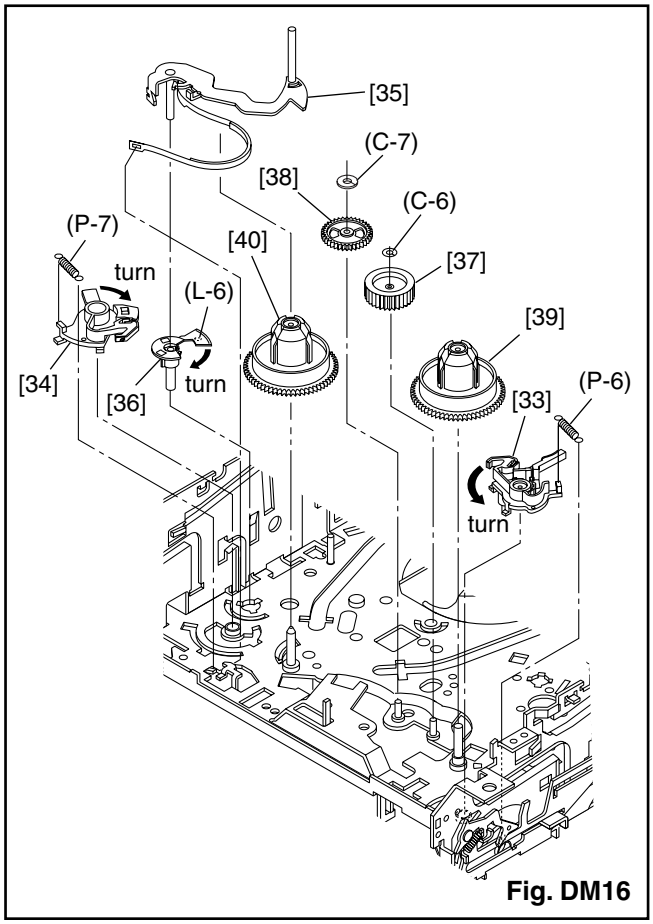


Fig. DM16

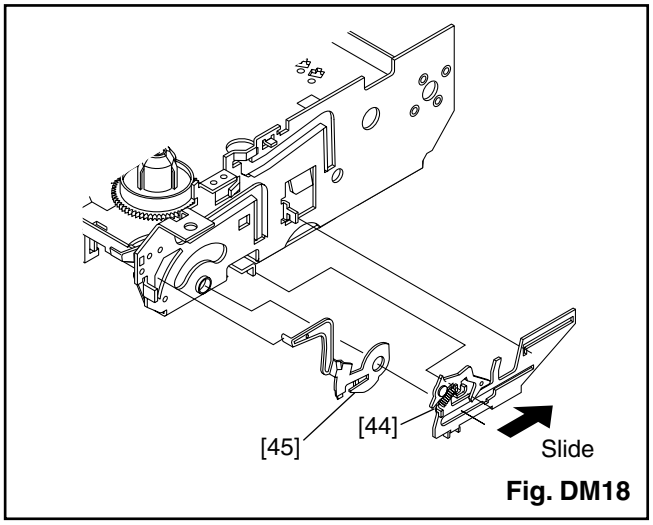


Fig. DM18

ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.

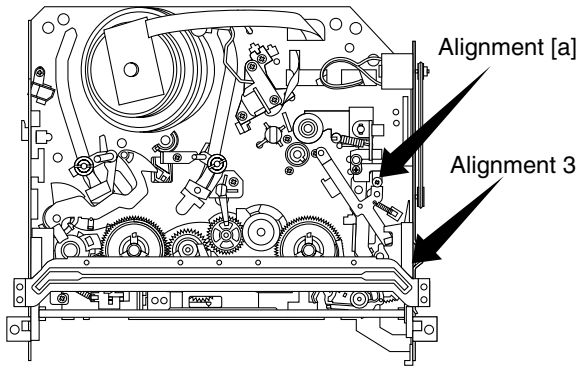
All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:

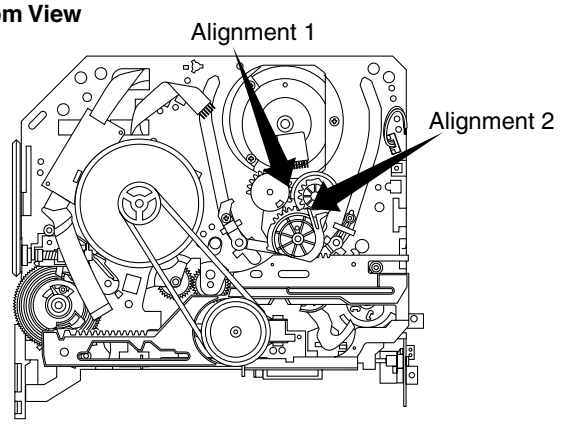
If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

Alignment points in Eject Position

Top View



Bottom View



Alignment [a] can be done independently of any other alignment.

Fig. AL1

Alignment 1

Loading Arm, S and T Assembly

Install Loading Arm S and T Assembly so that their triangle marks point to each other as shown in Fig. AL2.

Alignment 2

Mode Gear

Keeping the two triangles pointing at each other, install the Loading Arm T Assembly so that the last tooth of the gear meets the most inside teeth of the Mode Gear. See Fig. AL2.

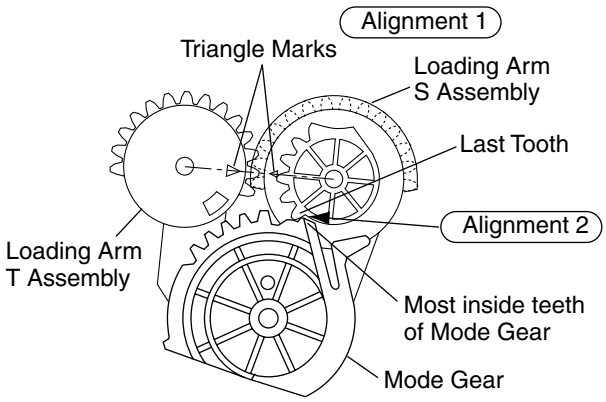


Fig. AL2

Alignment [a]

Tape Guide Assembly

Measurement of the screw must be as specified in Fig. AL3.

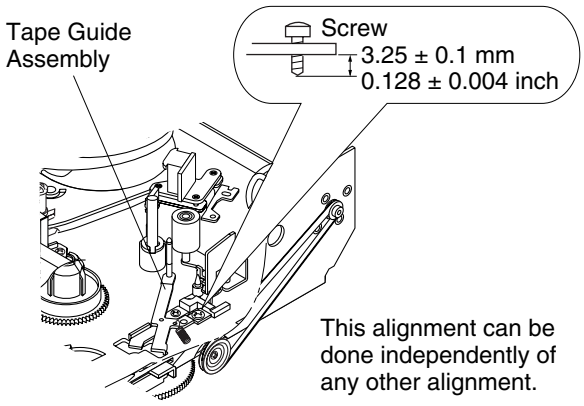


Fig. AL3

Alignment 3

Cam Gear (A), Rack Assembly

Install the Rack Assembly so that the first tooth on the gear of the Rack Assembly meets the first groove on the Cam Gear (A) as shown in Fig. AL4.

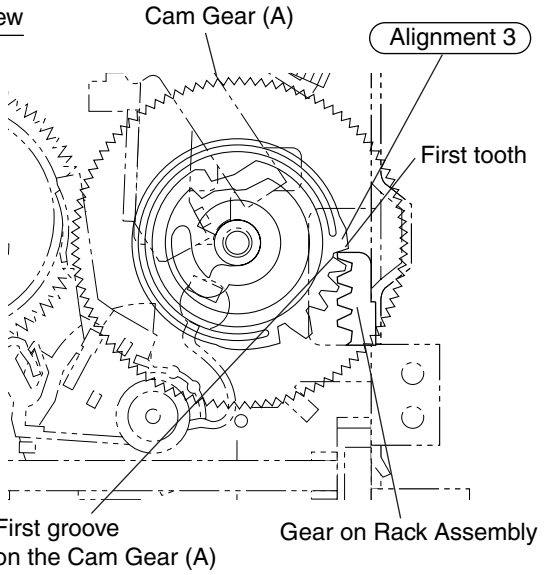


Fig. AL4

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is an abbreviation for "Circuit Board Assembly."

NOTE:

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press either "▼" or "▲" button on the remote control unit first, then the "PLAY" button (Front Panel only).

Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe,
   V-Range: 0.001~50V/Div.,
   F-Range: DC~AC-20MHz
2. Alignment Tape (MH-1)

Head Switching Position Adjustment

Purpose:

To determine the Head Switching point during playback.

Symptom of Misadjustment:

May cause Head Switching noise or vertical jitter in the picture.

Test point	Adj.Point	Mode	Input
TP751(V-OUT) TP302(RF-SW) GND	VR501 (Switching Point) (MAIN CBA)	PLAY (SP)	-----
Tape	**Measurement Equipment**	**Spec.**	
MH-1	Oscilloscope	6.5H±1H (412.7μs±60μs)	

Connections of Measurement Equipment

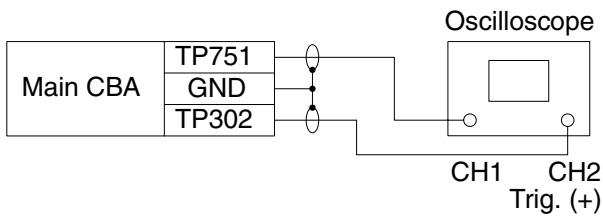
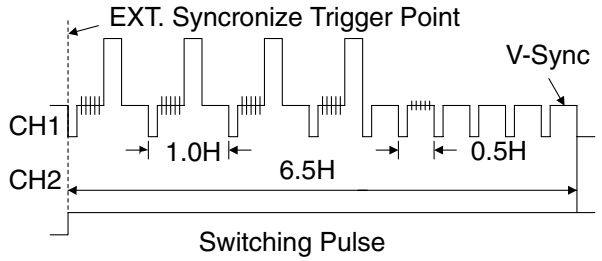


Figure 1

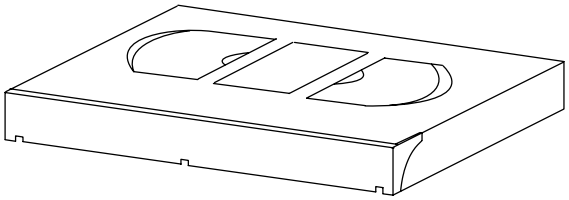


Reference Notes:

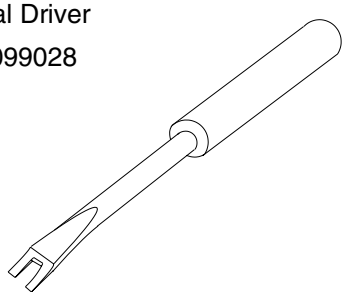
Play back the Alignment tape and adjust VR501 so that the V-sync front edge of the CH1 video output waveform is at the 6.5H(412.7μs) delayed position from the rising edge of the CH2 head switching pulse waveform.

FIXTURE AND TAPE FOR ADJUSTMENT

1. Alignment Tape
   No. 7099046 (MH-1)



2. Special Driver
   No. 7099028



How To Use The Fixtures And Tape

Item No.	Name	Part No.	Adjustment
1	Alignment Tape	7099046	● Head Switching Point ● Tape Interchangeability Alignment
2	Special Driver	7099028	● Guide Roller

MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

Service Information

A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 for a minute or two to complete this task.

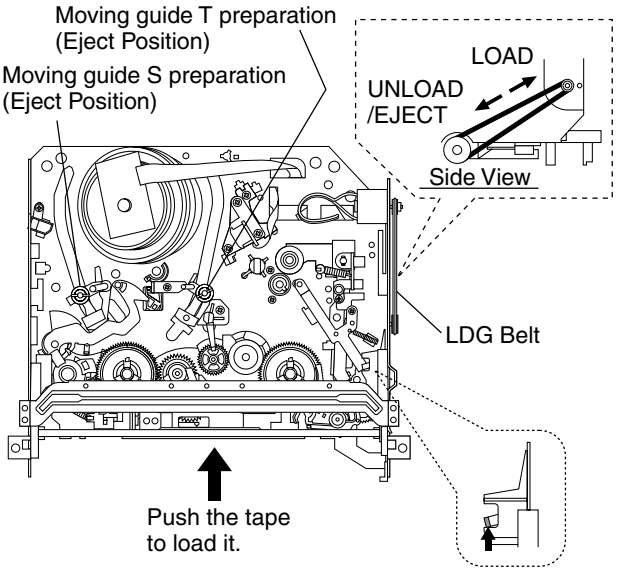
To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Make sure that the Moving guide preparations are in the Eject Position.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 until the Moving guide preparations come to the Eject Position. Stop turning when the preparations begin clicking or can not be moved further. However, the tape will be left wound around the cylinder.
5. Turn the LDG Belt in the appropriate direction continuously, and the cassette tape will be ejected. Allow a minute or two to complete this task.

B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Top Case and Front Assembly.
3. Turn the LDG Belt in the appropriate direction shown in Fig. M1. Release the locking tabs shown in Fig. M1 and continue turning the LDG Belt until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

Top View



Push the locking tab gently to unlock when loading without a cassette.

Fig. M1

Bottom View

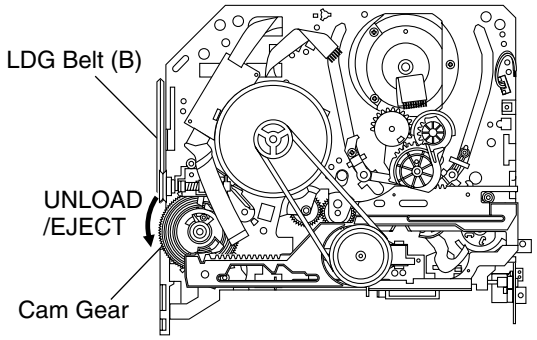


Fig. M2

1.Tape Interchangeability Alignment

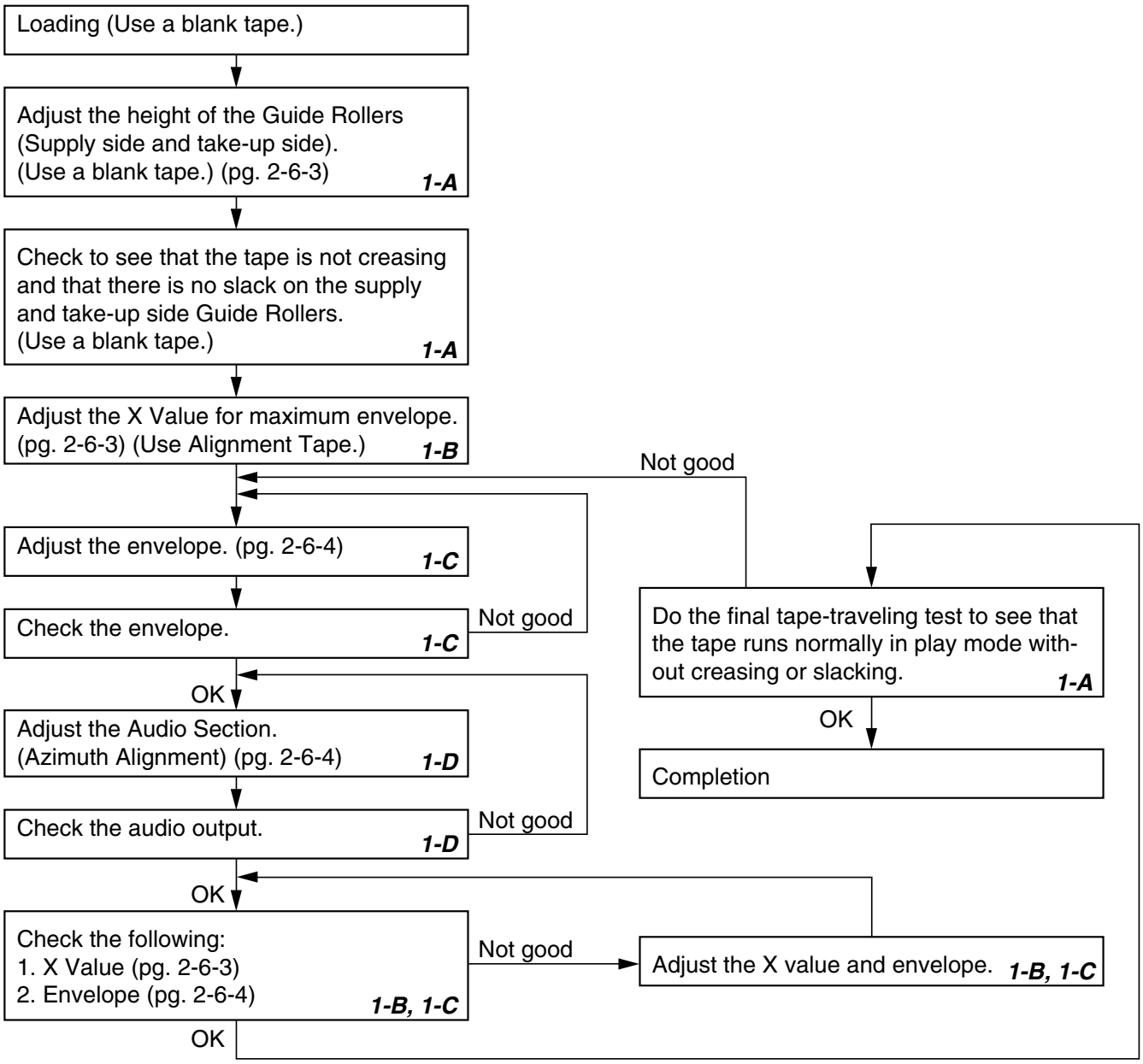
Note:
To do these alignment procedures, make sure that the Tracking Control Circuit is set to the center position every time a tape is loaded or unloaded. (Refer to page 2-6-4, procedure 1-C, step 2.)

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape (MH-1)
Guide Roller Adj. Screwdriver
X-Value Adj. Screwdriver

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

Flowchart of Alignment for tape traveling


Loading (Use a blank tape.)
Adjust the height of the Guide Rollers (Supply side and take-up side). (Use a blank tape.) (pg. 2-6-3) 1-A
Check to see that the tape is not creasing and that there is no slack on the supply and take-up side Guide Rollers. (Use a blank tape.) 1-A
Adjust the X Value for maximum envelope. (pg. 2-6-3) (Use Alignment Tape.) 1-B
Not good
Adjust the envelope. (pg. 2-6-4) 1-C
Check the envelope. 1-C
Not good
OK
Adjust the Audio Section. (Azimuth Alignment) (pg. 2-6-4) 1-D
Check the audio output. 1-D
Not good
OK
Check the following:
1. X Value (pg. 2-6-3)
2. Envelope (pg. 2-6-4) 1-B, 1-C
Not good
Adjust the X value and envelope. 1-B, 1-C
OK
Do the final tape-traveling test to see that the tape runs normally in play mode without creasing or slacking. 1-A
OK
Completion

1-A. Preliminary/Final Checking and Alignment of Tape Path

Purpose:

To make sure that the tape path is well stabilized.

Symptom of Misalignment:

If the tape path is unstable, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Play back a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)

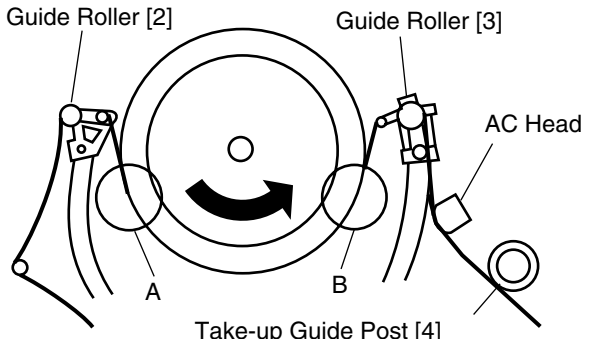


Fig. M3

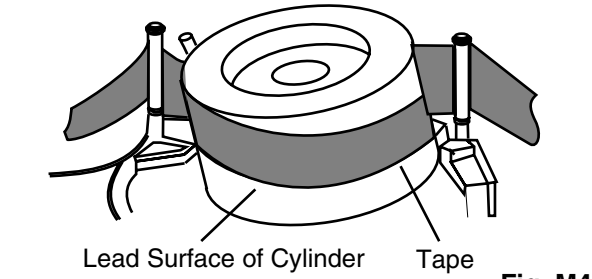


Fig. M4

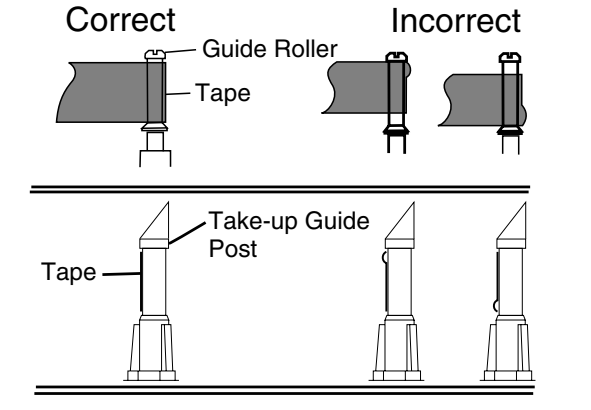


Fig. M5

3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and AC Head. (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the AC Head. (Fig. M6)

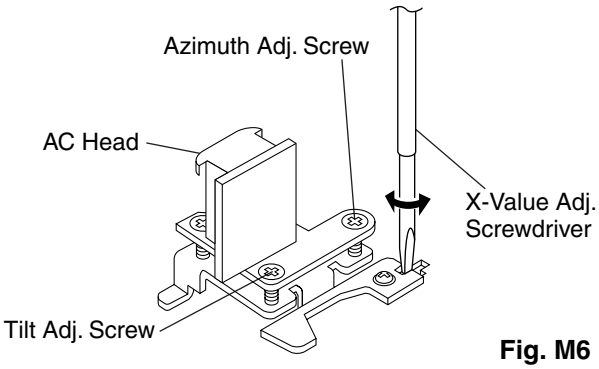


Fig. M6

1-B. X Value Alignment

Purpose:

To align the Horizontal Position of the Audio/Control/Erase Head.

Symptom of Misalignment:

If the Horizontal Position of the Audio/Control/Erase Head is not properly aligned, maximum envelope cannot be obtained at the Neutral position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) and TP303 (CTL) on the Main CBA. Use TP302 (RF-SW) as a trigger.
2. Play back the Gray Scale of the Alignment Tape (MH-1) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the center position by pressing CH UP button then " PLAY " button on the unit. (Refer to note on bottom of page 2-6-4.)
4. Use the X-Value Adj. Screwdriver so that the PB FM signal at TP301 (C-PB) is maximum. (Fig. M6)
5. Press CH UP button on the unit until the CTL waveform has shifted by approx. +2msec. Make sure that the envelope is simply attenuated (shrinks in height) during this process so that you will know the envelope has been at its peak.

6. Press CH DOWN button on the unit until the CTL waveform has shifted from its original position (not the position achieved in step 5, but the position of CTL waveform in step 4) by approximately -2msec. Make sure that the envelope is simply attenuated (shrinks in height) once CTL waveform passes its original position and is further brought in the minus direction.
7. Set the Tracking Control Circuit to the center position by pressing CH UP button and then " PLAY " button.

1-C. Checking/Adjustment of Envelope Waveform

Purpose:

To achieve a satisfactory picture and precise tracking.

Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) on the Main CBA. Use TP302 (RF-SW) as a trigger.
2. Play back the Gray Scale on the Alignment Tape (MH-1). Set the Tracking Control Circuit to the center position by pressing CH UP button and then " PLAY " button on the unit. Adjust the height of Guide Rollers [2] and [3] (Fig. M3, Page 2-6-3) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
3. If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
4. If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
5. When Guide Rollers [2] and [3] (Refer to Fig.M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure center position. The number of pushes CH UP button to achieve 1/2 level of envelope should match the number of pushes CH DOWN button from center. If required, redo the "X Value Alignment."

1-D. Azimuth Alignment of Audio/Control/ Erase Head

Purpose:

To correct the Azimuth alignment so that the Audio/ Control/Erase Head meets tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the alignment tape (MH-1) and confirm that the audio signal output level is 8kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform on the oscilloscope is at maximum. (Fig. M6)

Dropping envelope level at the beginning of track.

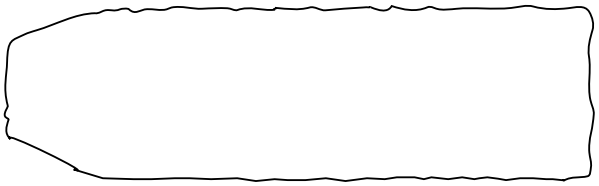


Fig. M7

Dropping envelope level at the end of track.

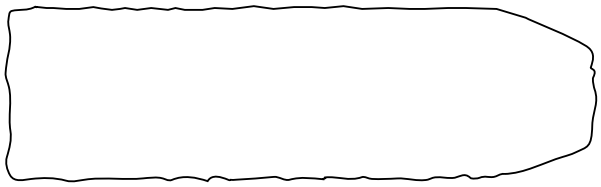


Fig. M8

Envelope is adjusted properly. (No envelope drop)

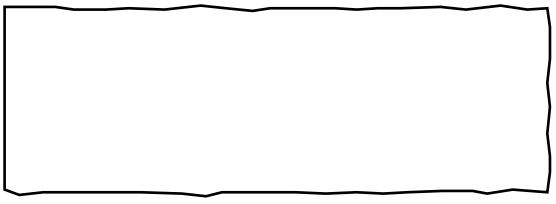


Fig. M9

STANDARD MAINTENANCE

Service Schedule of Components

h: Hours ❍: Check ●: Change

Deck		Periodic Service Schedule			
Ref.No.	**Part Name**	**1,000 h**	**2,000 h**	**3,000 h**	**4,000 h**
B2	Cylinder Assembly	❍	●	❍	●
B3	Loading Motor Assembly			●	
B8	Pulley Assembly		●		●
B27	Tension Lever Sub Assembly		●		●
B31	AC Head Assembly			●	
B573,B574	Reel S, Reel T			●	
B37	Capstan Motor		●		●
B52	Cap Belt		●		●
*B73	FE Head			●	
B133	Idler Assembly		●		●
B410	Pinch Arm (A) Assembly		●		●
B414	M Brake S Assembly		●		●
B416	M Brake T Assembly		●		●
B525	LDG Belt		●		●

Notes:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / Audio Control Head / Full Erase Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.

   * B73 ------ Recording Model only

Cleaning

Cleaning of Video Head

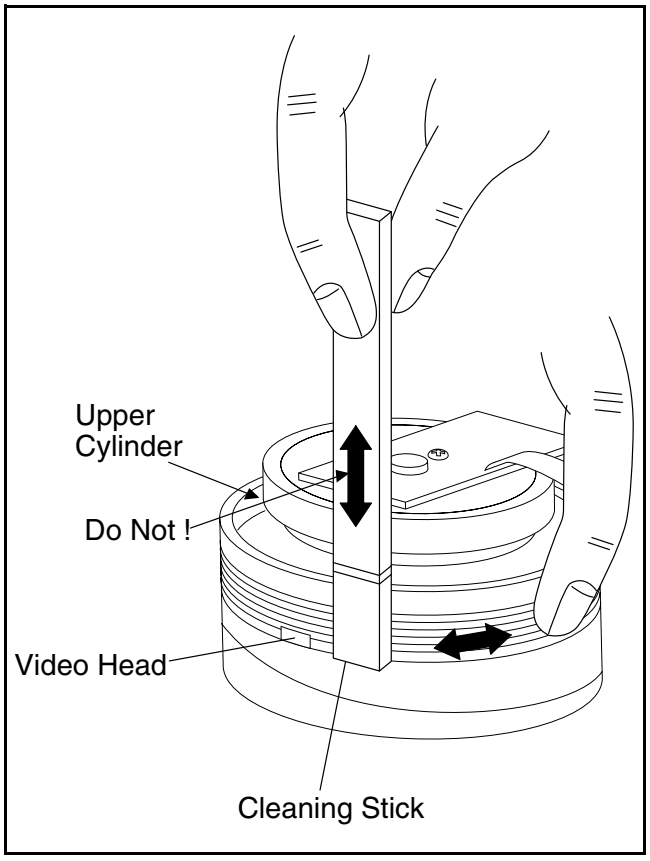
Clean the head with a head cleaning stick or chamois cloth.

Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois cloth and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois cloth.



Cleaning of Audio Control Head

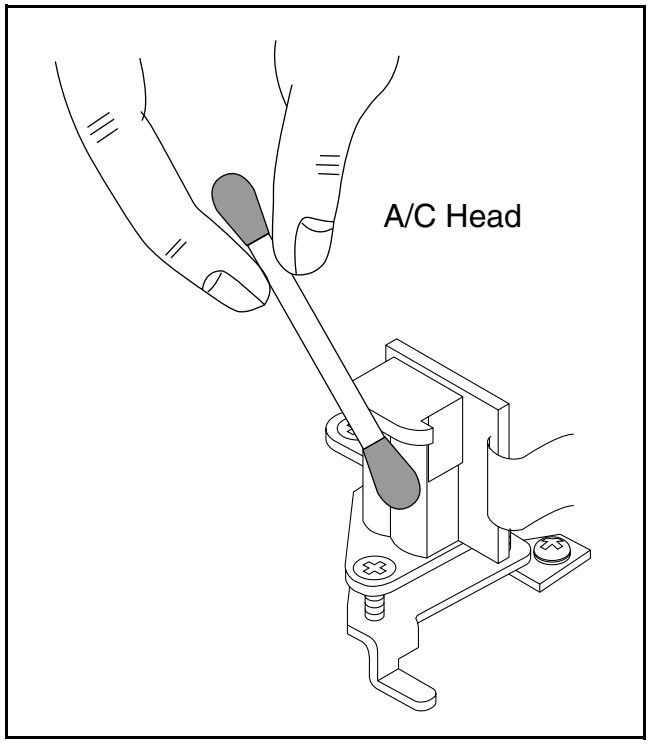
Clean the head with a cotton swab.

Procedure

1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the audio control head. Be careful not to damage the upper drum and other tape running parts.

Notes:

1. Avoid cleaning the audio control head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.



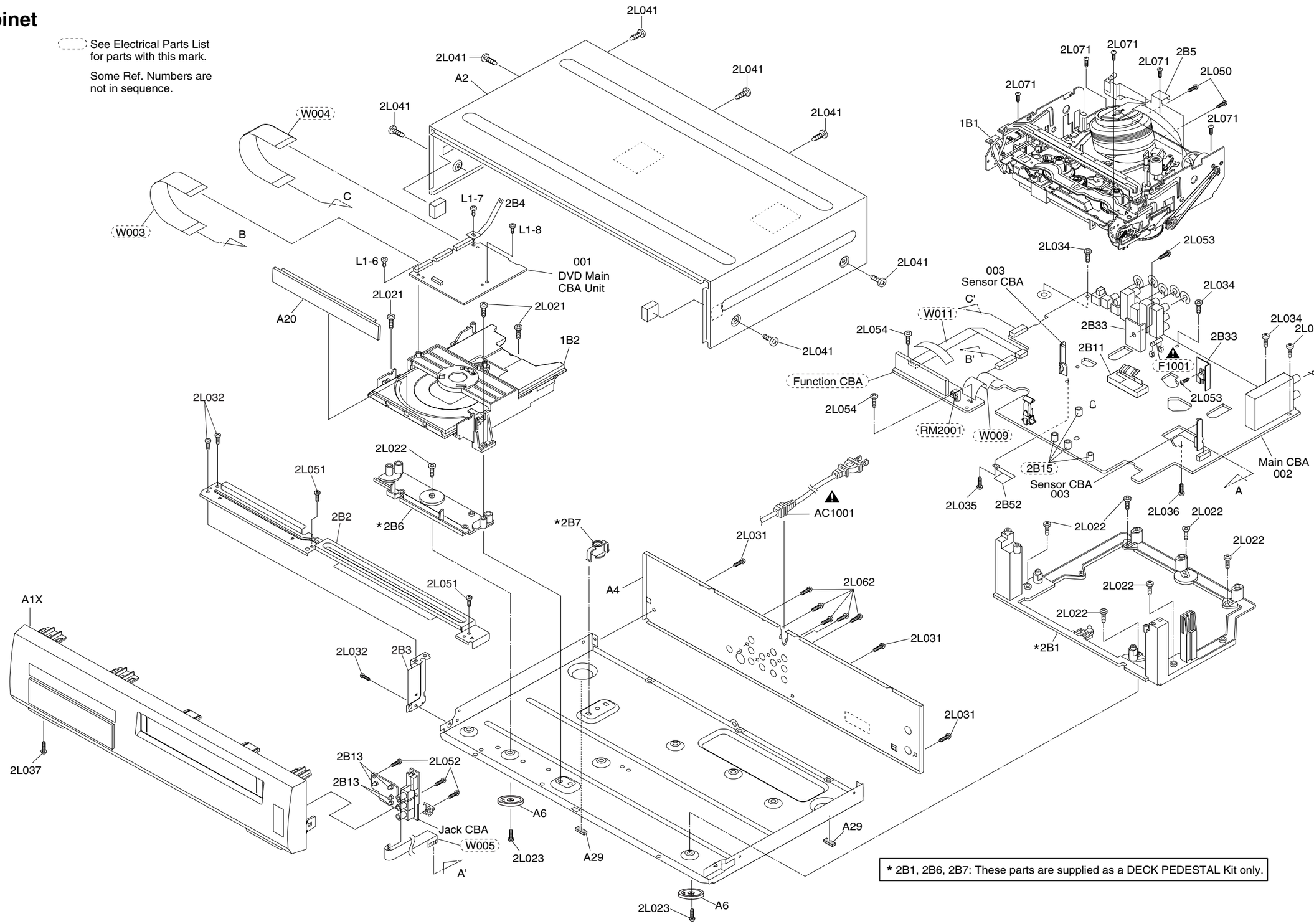
CHAPTER 3 EXPLODED VIEWS AND PARTS LIST

EXPLODED VIEWS

Cabinet

See Electrical Parts List for parts with this mark.

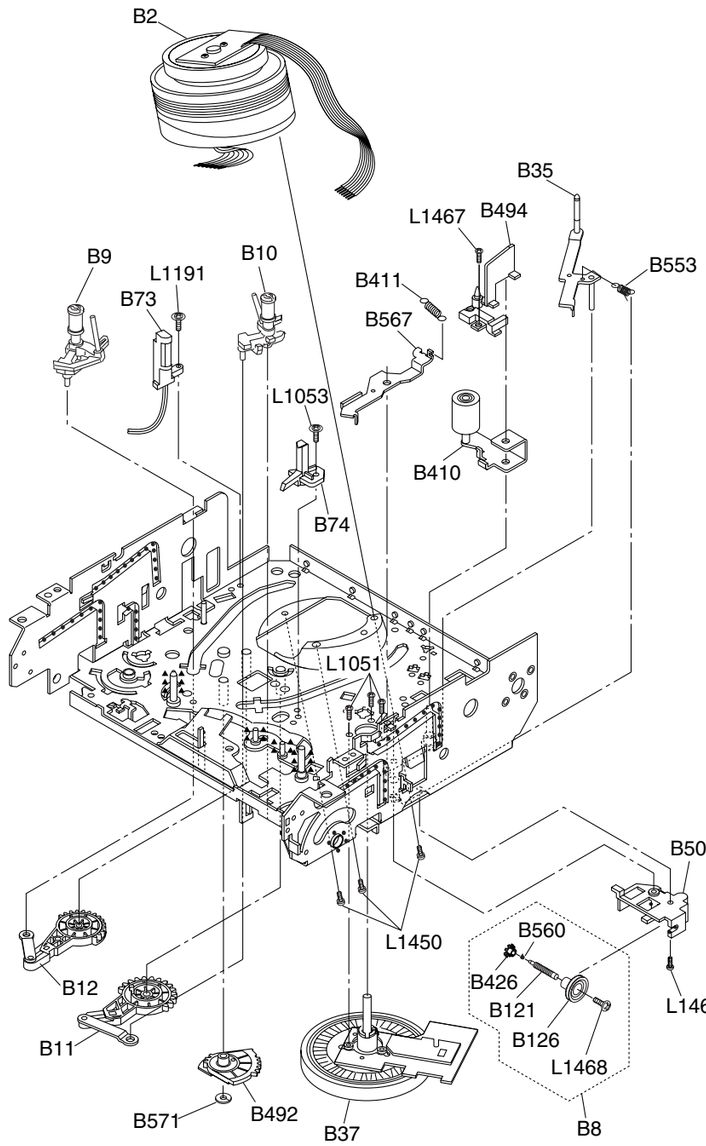
Some Ref. Numbers are not in sequence.

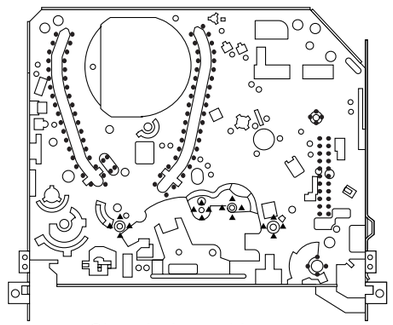


* 2B1, 2B6, 2B7: These parts are supplied as a DECK PEDESTAL Kit only.

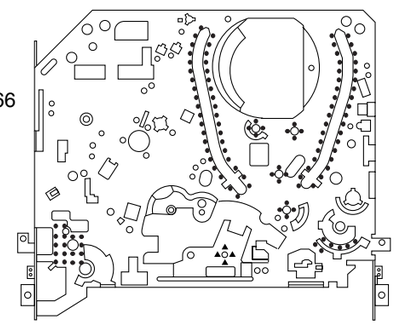
Deck Mechanism View 1

Mark	Description
●●●●●	Floil G-374G (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150





Chassis Assembly
Top View (Lubricating Point)

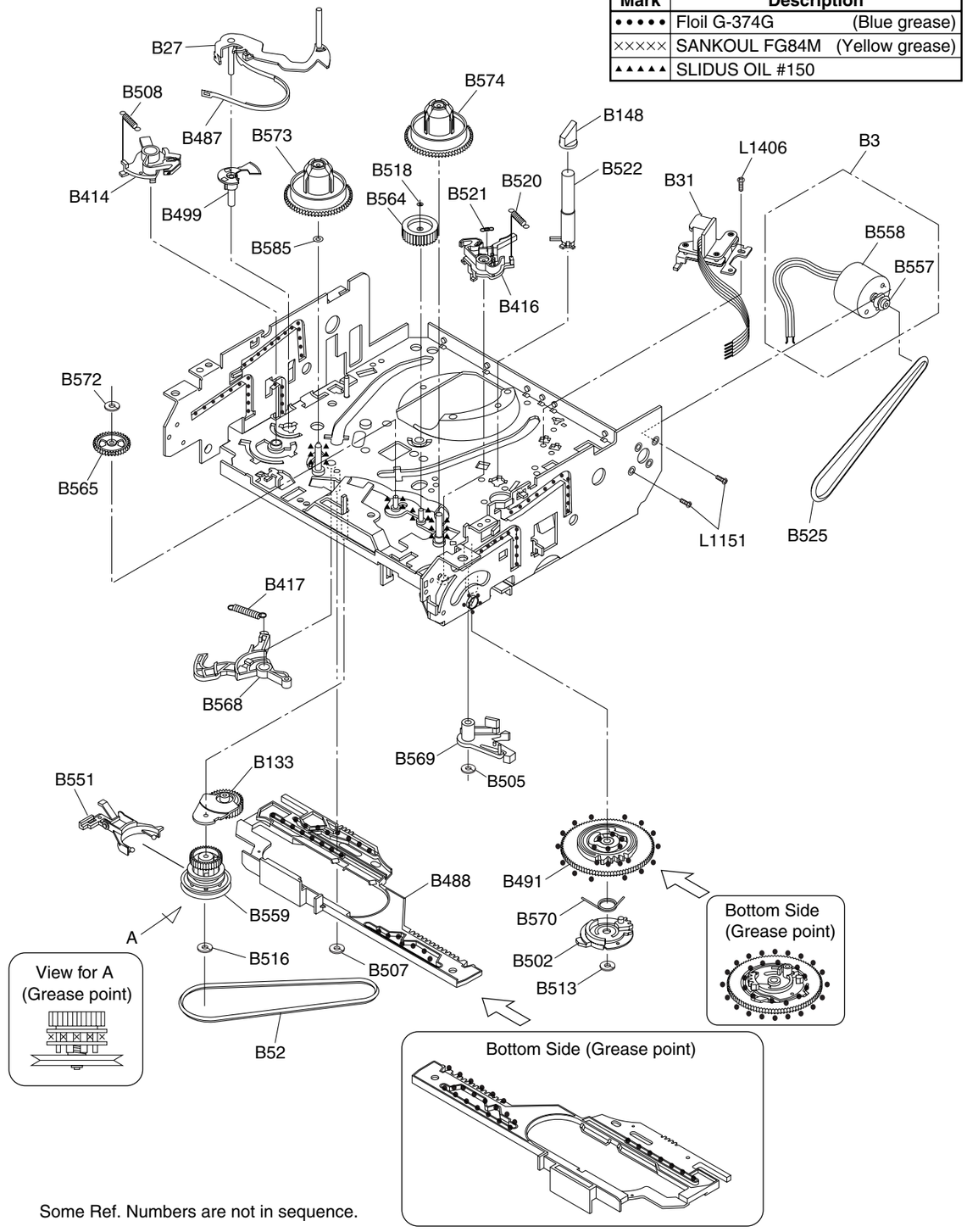


Chassis Assembly
Bottom View (Lubricating Point)

Some Ref. Numbers are not in sequence.

Deck Mechanism View 2

Mark	Description
●●●●●	Floil G-374G (Blue grease)
×××××	SANKOUL FG84M (Yellow grease)
▲▲▲▲▲	SLIDUS OIL #150



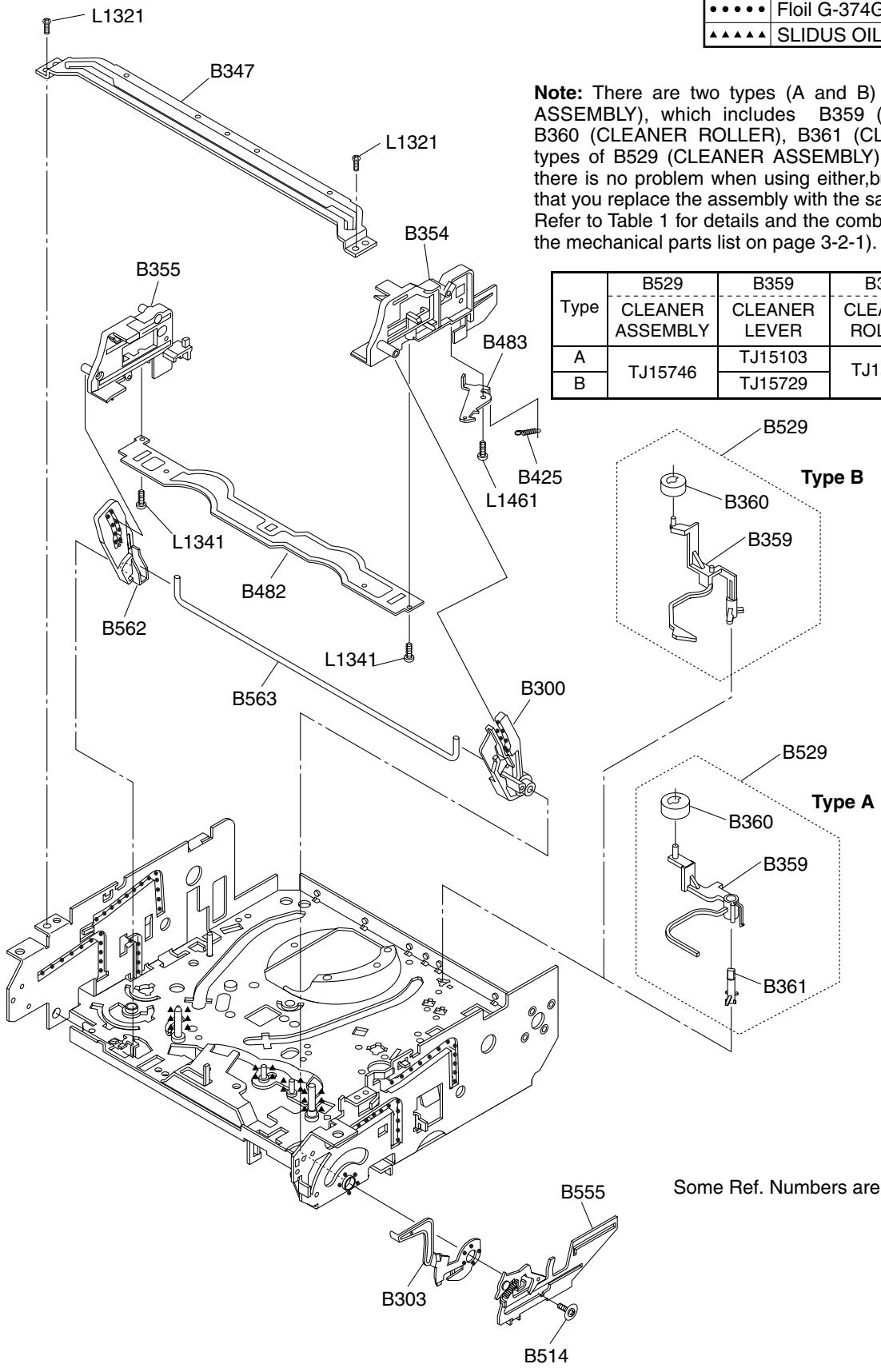
Some Ref. Numbers are not in sequence.

Deck Mechanism View 3

Mark	Description
• • • • •	Floil G-374G (Blue grease)
▲ ▲ ▲ ▲ ▲	SLIDUS OIL #150

Note: There are two types (A and B) of B529 (CLEANER ASSEMBLY), which includes B359 (CLEANER LEVER), B360 (CLEANER ROLLER), B361 (CL POST), etc. These types of B529 (CLEANER ASSEMBLY) are compatible, and there is no problem when using either,but it is recommended that you replace the assembly with the same type if possible. Refer to Table 1 for details and the combination, (also, refer to the mechanical parts list on page 3-2-1).

Type	B529 CLEANER ASSEMBLY	B359 CLEANER LEVER	B360 CLEANER ROLLER	B361 CL POST
A	TJ15746	TJ15103	TJ15104	TJ15105
B		TJ15729		NOT Used



Some Ref. Numbers are not in sequence.

REPLACEMENT PARTS LIST

Mechanical Parts List

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANISM SECTION
A1X	TS17311	FRONT ASSEMBLY
A2	TJ15941	TOP COVER
A4	TJ15942	PANEL, REAR
A6	TS17312	INSULATOR ASSEMBLY
A20	TS17313	TRAY ASSEMBLY
A29	TJ15943	FOOT
⚠ AC1001!	TE14761	AC CORD
1B1	TS17314	DECK ASSEMBLY
1B2	TS17315	DVD LODER ASSEMBLY
2B1	TJ15944	DECK PEDESTAL
2B2	TJ15945	TOP BRACKET
2B3	TJ15946	SIDE BRACKET
2B5	TJ15947	SHEILD, CYLINDER
2B6	TJ15944	DECK PEDESTAL
2B7	TJ15944	DECK PEDESTAL
2B11	TS17391	SHIELD ASSEMBLY
2B13	TE13012	BUSH, LED(E)
2B15	TJ15122	BUSH, LED(F)
2B33	TJ15971	HEATSINK
2L021	TJ15951	SCREW
2L022	TJ15952	SCREW (3X8)
2L031	TJ10176	SCREW (M3X6)
2L032	TJ10176	SCREW (M3X6)
2L034	TJ10176	SCREW (M3X6)
2L035	TJ15953	SCREW (M3X8)
2L036	TJ15954	SCREW (M3X8)
2L037	TJ10176	SCREW (M3X6)
2L041	TJ15891	SCREW (M3X5)
2L050	TJ15955	SCREW (M3X5)
2L051	TJ10177	SCREW (3X8)
2L052	TJ10177	SCREW (3X8)
2L053	TJ15956	SCREW (3X8)
2L054	TJ10177	SCREW (3X8)
2L062	TJ15892	SCREW (M3X8)
2L071	TJ10119	SCREW (M3X10)
B2	TS17441	CYLINDER ASSEMBLY
B3	TS17442	LOADING MOTOR ASSEMBLY
B8	TS17443	PULLEY ASSEMBLY
B9	TJ15152	MOVING GUIDE (S)
B10	TJ15153	MOVING GUIDE (T)
B11	TS17444	LOADING ARM (T) ASSEMBLY
B12	TS17445	LOADING ARM (S) ASSEMBLY
B27	TS17446	TENSION LEVER SUB ASSEMBLY
B31	TS17447	AC HEAD
B35	TS17448	TAPE GUIDE
B37	TJ15981	CAPSTAN MOTOR
B52	TJ15161	CAP BELT
B73	TS17499	FE HEAD
B74	TJ15163	PRISM
B121	TJ15982	WORM
B126	TJ15983	PULLEY
B133	TJ15168	IDLER ASSEMBLY
B148	TJ15984	TG CAP
B300	TJ15985	CASSETTE DRIVE LEVER (R)
B303	TJ15986	DOOR OPENER
B347	TJ15987	GUIDE HOLDER (A)
B354	TJ15988	SLIDER (R)
B355	TJ15989	SLIDER (L)
B359	TJ15103	CLEANER LEVER [Type A]
B359	TJ15729	CLEANER LEVER [Type B]
B360	TJ15104	CLEANER ROLLER
B361	TJ15105	CL POST [Type A]
B410	TS17451	PINCH ARM (A) ASSEMBLY
B411	TJ15181	PINCH SPRING
B414	TS17452	BRAKE (S) ASSEMBLY
B416	TS17453	BRAKE (T) ASSEMBLY
B417	TJ15991	TENSION SPRING
B425	TJ15185	LOCK LEVER SPRING
B426	TJ15186	KICK PULLEY
B482	TJ15992	CASSETTE PLATE
B483	TJ15292	LOCK LEVER
B487	TJ15293	BAND BRAKE
B488	TJ15993	MODE LEVER
B491	TJ15994	CAM GEAR(A)
B492	TJ15995	MODE GEAR
B494	TJ15996	DOOR OPENER (B)
B499	TJ15196	LEVER HOLDER (T)
B501	TJ15997	WORM HOLDER
B502	TJ15198	CAM GEAR(B)
B505	TJ15998	WASHER
B507	TJ14034	WASHER
B508	TJ15199	BRAKE SPRING (S)
B513	TJ15201	WASHER
B514	TJ15999	SCREW RACK
B516	TJ14034	WASHER
B518	TJ15203	WASHER
B520	TJ15204	BRAKE SPRING (T)
B521	TJ15209	SOFT SPRING
B522	TS17454	TG POST
B525	TJ16001	LDG BELT
B529	TJ15746	CLEANER ASSEMBLY
B551	TJ16002	FF ARM
B553	TJ16003	REV SPRING
B555	TS17456	RACK ASSEMBLY
B557	TJ15215	MOTOR PULLEY
B558	TS16004	LOADING MOTOR
B559	TS17457	CLUTCH ASSEMBLY
B560	TJ15303	KICK SPRING

SYMBOL-NO	P-NO	DESCRIPTION
B562	TJ15221	CASSETTE DRIVE LEVER (L)
B563	TJ15222	SLIDER SHAFT
B564	TJ15223	GEAR (M)
B565	TJ16005	SENSOR GEAR
B567	TJ15226	PINCH ARM (B)
B568	TJ15304	BT ARM
B569	TJ16006	CAM HOLDER
B570	TJ15229	CAM RACK SPRING
B571	TJ10229	WASHER
B572	TJ15203	WASHER
B573	TJ16007	REEL (S)
B574	TJ16008	REEL (T)
B585	TJ16009	WASHER
L1051	TJ14055	SCREW (M2.6X6)
L1053	TJ15313	SCREW (M2.6X8)
L1151	TJ15236	SCREW (M2.6X4)
L1191	TJ15313	SCREW (M2.6X8)
L1321	TJ10176	SCREW (M3X6)
L1341	TE13298	SCREW (M2.6X6)
L1406	TJ15238	SCREW
L1407	TJ15957	SCREW (M2.6X10)
L1450	TE12971	SCREW (M2.6X5)
L1461	TJ14061	SCREW (M2.6X6)
L1466	TJ14066	SCREW (M2.6X6)
L1467	TJ15958	SCREW (M2.6X5)
L1468	TJ15959	SCREW (M1.7X12)
001	TS17361	DVD MAIN CBA UNIT
002	TS17371	MCV CBA
003	TS17381	SENSOR CBA

ACCESSORIES

X1	TS16905	REMOTE CONTROL UNIT
X3	5857952	RF CABLE
X5	TE14751	AV CORD

SYMBOL-NO	P-NO	DESCRIPTION

Electrica Parts List

Note: Although some parts in the schematic diagrams have different names from those in the parts list, there is no problem in replacing parts.

SYMBOL-NO	P-NO	DESCRIPTION
		RESISTOR
VR501	TJ13934	CARBON P.O.T. 100K OHM B
		SEMI-CONDUCTORS
D013	TC10791	RECTIFIER DIODE BA157
D015	TJ15128	RECTIFIER DIODE FR202
D016	TJ14082	SCHOTTKY BARRIER DIODE SB340
D018	TC10604	ZENER DIODE MTZJT-779.1C
D052	TJ13919	ZENER DIODE MTZJT-7710B
D054	TJ15129	RECTIFIER DIODE RL151
D055	TC10112	SWITCHING DIODE 1SS133(T-77)
D057	TJ13896	ZENER DIODE MTZJT-775.1C
D071	TC10752	RECTIFIER DIODE 1N4005
D301	TC10112	SWITCHING DIODE 1SS133(T-77)
D302	TC10112	SWITCHING DIODE 1SS133(T-77)
D303	TC10112	SWITCHING DIODE 1SS133(T-77)
D501	TC10112	SWITCHING DIODE 1SS133(T-77)
D555	TJ13898	LED SIR-563ST3F P
D588	TC12491	LED(GREEN) 204-10GD/S957
D589	TC12491	LED(GREEN) 204-10GD/S957
D652	TC12491	LED(GREEN) 204-10GD/S957
D653	TC12491	LED(GREEN) 204-10GD/S957
D654	TJ15414	LED(RED) 204HD/E
D655	TJ15414	LED(RED) 204HD/E
D656	TJ15414	LED(RED) 204HD/E
D701	TC10607	ZENER DIODE MTZJT-7733D
D702	TJ14691	ZENER DIODE MTZJT-778.2A
D1001	TC10752	RECTIFIER DIODE 1N4005
D1002	TC10752	RECTIFIER DIODE 1N4005
D1003	TC10752	RECTIFIER DIODE 1N4005
D1004	TC10752	RECTIFIER DIODE 1N4005
D1007	TC12471	ZENER DIODE DZ-39BSBT265
D1008	TJ14082	SCHOTTKY BARRIER DIODE SB340
D1009	TJ15128	RECTIFIER DIODE FR202
D1010	TC10791	RECTIFIER DIODE BA157
D1011	TE13211	RECTIFIER DIODE BA158
D1012	TC10112	SWITCHING DIODE 1SS133(T-77)
D1015	TC12191	ZENER DIODE DZ-6.8BSBT265
D1016	TJ15333	RECTIFIER DIODE FR101
D1017	TJ13897	ZENER DIODE MTZJT-7722B
D1018	TC10112	SWITCHING DIODE 1SS133(T-77)
D1022	TC10112	SWITCHING DIODE 1SS133(T-77)
D1024	TC10112	SWITCHING DIODE 1SS133(T-77)
D1025	TC10112	SWITCHING DIODE 1SS133(T-77)
D1030	TC10757	FAST RECOVERY DIODE ERB32-01
D1036	TC12201	ZENER DIODE DZ-13BSBT265
D1048	TC12481	ZENER DIODE DZ-15BSBT265
D1049	TC10112	SWITCHING DIODE 1SS133(T-77)
D2001	TC10754	SWITCHING DIODE 1N4148M
D2003	TC10754	SWITCHING DIODE 1N4148M
D2004	TC10754	SWITCHING DIODE 1N4148M
D2005	TC10752	RECTIFIER DIODE 1N4005
D2006	TC10752	RECTIFIER DIODE 1N4005
D2007	TC10752	RECTIFIER DIODE 1N4005
IC301	TJ15132	IC LA71091M
IC451	TC12511	IC LA72655M
IC501	TC12521	IC M37768M6A-1C8GP
IC751	TC12531	IC TC4053BF(N)
⚠ IC1001	TE13224	PHOTOCOUPLER LTV-817B-F
⚠ IC1002	TC12231	IC PQ018EF01SZ
IC1003	TC12241	IC KIA431-AT
⚠ IC1004	TC12541	IC KIA78R33PI
IC1006	TC12241	IC KIA431-AT
IC1201	TC12251	IC KIA4558P
IC1402	TC12271	IC MM1567AJ
IC2001	TC12281	IC PT6315-S(-TP)
Q052	TJ13923	TRANSISTOR KRC103M
Q055	TE13235	TRANSISTOR KTC3203(Y)
Q056	TE13235	TRANSISTOR KTC3203(Y)
Q060	TJ13923	TRANSISTOR KRA103M
Q301	TC10784	TRANSISTOR KTA1266(GR)
Q302	TC10783	TRANSISTOR KTC3193(Y)
Q303	TC10783	TRANSISTOR KTC3193(Y)
Q391	TC10784	TRANSISTOR KTA1266(GR)
Q421	TC10784	TRANSISTOR KTA1266(GR)
Q422	TE13235	TRANSISTOR KTC3203(Y)
Q423	TJ13924	TRANSISTOR 2SC536NF-NPA-AT
Q424	TJ13924	TRANSISTOR 2SC536NF-NPA-AT
Q425	TJ13923	TRANSISTOR KRA103M
Q501	TE13243	TRANSISTOR KTC3199(BL)
Q503	TJ15141	PHOTO TRANSISTOR PT204-6B-12
Q504	TJ15141	PHOTO TRANSISTOR PT204-6B-12
Q506	TJ15141	PHOTO TRANSISTOR PT204-6B-12
Q760	TJ13923	TRANSISTOR KRC103M
Q762	TC10778	TRANSISTOR KTC3199(Y)
Q763	TC10778	TRANSISTOR KTC3199(Y)
Q1001	TC12551	TRANSISTOR 2SK2662
Q1002	TE13243	TRANSISTOR KTC3199(BL)
Q1003	TC10778	TRANSISTOR KTC3199(Y)
Q1004	TC12561	TRANSISTOR KTC3202(Y)
Q1005	TC12311	TRANSISTOR KRC110M-AT
Q1006	TC12411	TRANSISTOR KRA110M
Q1007	TC12301	TRANSISTOR KTC3205(Y)
Q1008	TC10778	TRANSISTOR KTC3199(Y)
Q1011	TC12321	TRANSISTOR KTA1273(Y)
Q1015	TJ13923	TRANSISTOR KRC103M
Q1201	TC10778	TRANSISTOR KTC3199(Y)
Q1202	TC10778	TRANSISTOR KTC3199(Y)
Q1203	TC10784	TRANSISTOR KTA1266(GR)

	SYMBOL-NO	P-NO	DESCRIPTION
	Q1204	TC10784	TRANSISTOR KTA1266(GR)
	Q1351	TC10778	TRANSISTOR KTC3199(Y)
	Q2022	TC10784	TRANSISTOR KTA1266(GR)
			TRANSFORMER
⚠	T001	TA14551	PULSE TRANS CSA-SW0091D
			COILS
	L009	TJ13909	CHOKE COIL 47UH
	L251	5121289	INDUCTOR 22UH
	L301	TA12561	INDUCTOR 100UH
	L303	TJ15137	INDUCTOR 220UH
	L304	TJ13909	CHOKE COIL 47UH
	L421	TJ13915	INDUCTOR 47UH
	L502	TA12561	INDUCTOR 100UH
	L503	TJ13909	CHOKE COIL 47UH
	L701	TA12563	INDUCTOR 4.7UH
	L851	TJ15138	INDUCTOR 1.8UH
	L852	5121289	INDUCTOR 22UH
	L853	TA12562	INDUCTOR 12UH
⚠	L1001	TA14541	LINE FILTER 27MH
	L1004	TA12575	BEAD CORE
	L1007	TJ13909	CHOKE COIL 47UH
	L1008	TJ13909	CHOKE COIL 47UH
	L1009	TJ13909	CHOKE COIL 47UH
	L1251	TA14481	INDUCTOR 0.47UH
	L1521	TJ13909	CHOKE COIL 47UH
	L2001	TA12561	INDUCTOR 100UH
			CRYSTALS
	X301	TJ15145	CRYSTAL 3.58MHZ
	X502	TJ15146	CRYSTAL 32.8KHZ
			MISCELLANEOUS
	CN505	TE15091	CONNECTOR(10P)
	CN651	TE15171	CONNECTOR(10P)
	CN1001	TE15101	CONNECTOR(26P)
	CN1601	TE15111	CONNECTOR(18P)
	CN2001	TE15161	CONNECTOR(10P)
	CN2002	TE15121	CONNECTOR(10P)
⚠	F1001	TE13223	FUSE 1A/250V
	FH1001	TE11084	FUSE HOLDER
	FH1002	TE11084	FUSE HOLDER
	FL2001	TE14801	V.F.D. 20U29100SAN
⚠	GP1001	TJ13894	GAP. FNR-G3.10D
	JK751	TE15131	JACK
	JK752	TE15132	JACK
	JK753	TE15181	JACK(YELLOW)
	JK754	TE15182	JACK(WHITE)
	JK755	TE15183	JACK(RED)
	JK756	TE15133	JACK
	JK1202	TE15134	JACK(BLACK)
	JK1401	TE14821	JACK
	JK1403	TE15135	JACK

	SYMBOL-NO	P-NO	DESCRIPTION
	RM2001	TC12331	REMOTE RECEIVER PIC-37043LU
⚠	SA001	TC10891	SURGE ABSORBER PVR-10D471KB
	SW506	TE15141	LEAF SWITCH
	SW507	TJ15142	ROTARY MODE SWITCH
	SW521	TE11957	TACT SWITCH
	SW522	TE11957	TACT SWITCH
	SW523	TE11957	TACT SWITCH
	SW524	TE11957	TACT SWITCH
	SW525	TE11957	TACT SWITCH
	SW526	TE11957	TACT SWITCH
	SW651	TE11957	TACT SWITCH
	SW652	TE11957	TACT SWITCH
	SW654	TE11957	TACT SWITCH
	SW655	TE11957	TACT SWITCH
	SW701	TE11942	SLIDE SWITC
	SW2011	TE11957	TACT SWITCH
	SW2012	TE11957	TACT SWITCH
	SW2014	TE11957	TACT SWITCH
	SW2016	TE11957	TACT SWITCH
	SW2017	TE11957	TACT SWITCH
	TU701	TS17421	TUNER UNIT VD045AS [Type A]
	TU701	TS17431	TUNER UNIT TMZH2-001A [Type B]
	W003	TE15151	CABLE (26P)
	W004	TE15152	CABLE (18P)
	W005	TE15153	CABLE (10P)
	W009	TE15155	WIRE (10P)
	W011	TE15154	CABLE (10P)
	W022	TE15156	WIRE
	W023	TE15157	WIRE

CHAPTER 4 SCHEMATIC AND BLOCK DIAGRAMS/CBA'S

SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

WARNING

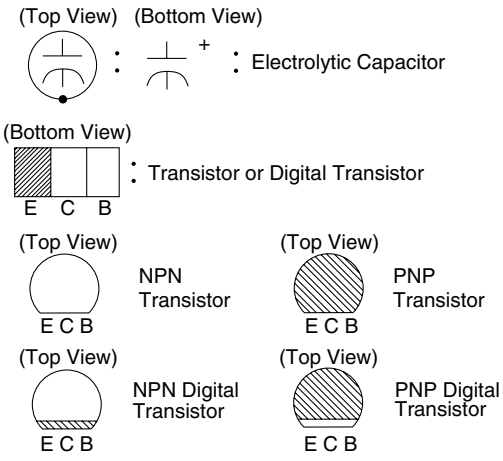
Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety char-acteristics are identified in this manual and its supple-ments; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these compo-nents, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 - 80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 - 80%	20°C	-10~+70°C

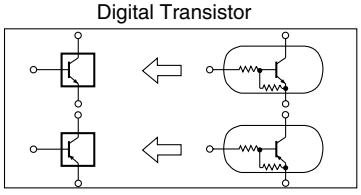
Capacitors and transistors are represented by the following symbols.

CBA Symbols



Schematic Diagram Symbols

Digital Transistor



Notes:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All voltages are DC voltages unless otherwise speci-fied.

Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations.

[Resistors]

Item	Indication
Value	No indication.....Ω K.....kΩ M.....MΩ
Power capacitance	No indication.....1/4W,1/6W All capacitances other than the above are indicated in schematic diagrams.

[Capacitors]

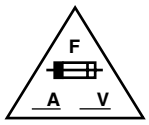
Item	Indication
Value	No indication.....μF P.....pF
Dielectric strength	No indication.....50V All dielectric strengths other than 50V are indicated in schematic diagrams.

[Coils]

Item	Indication
Value	μ.....μH m.....mH

LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. **CAUTION:**



FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

This symbol means fast operating fuse.
Ce symbole reprèsente un fusible à fusion rapide.

2. **CAUTION:**

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. **Note:**

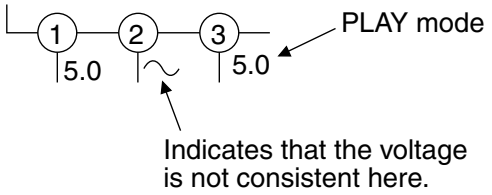
(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Wire Connectors

(1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).
(2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

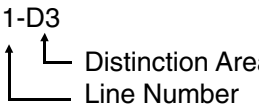
5. Mode: SP

6. Voltage indications for PLAY modes on the schematics are as shown below:



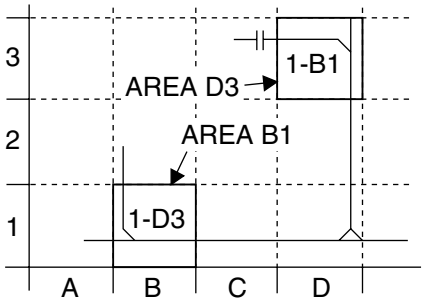
Unit: Volts

7. How to read converged lines



Examples:

1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



8. Test Point Information

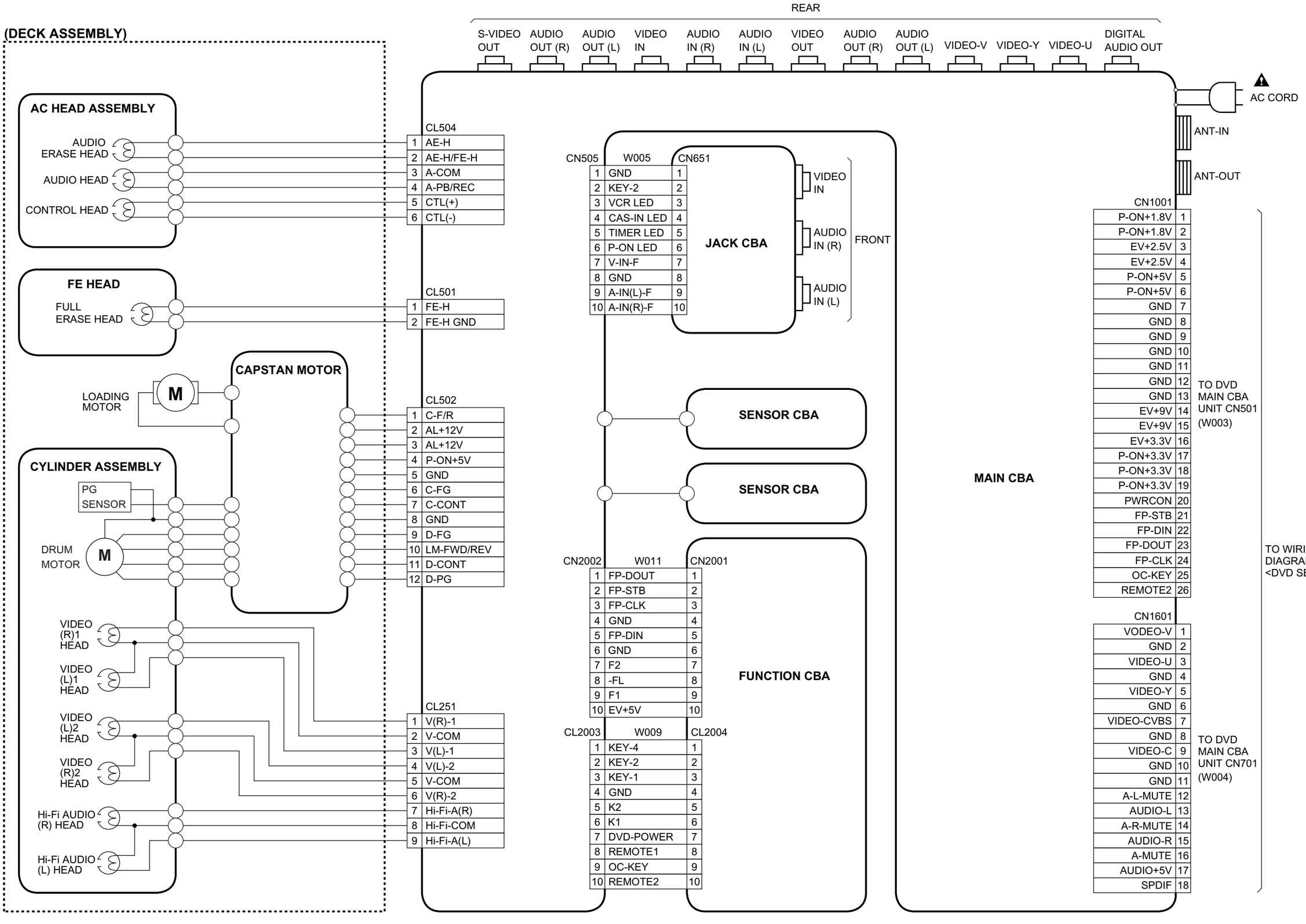
: Indicates a test point with a jumper wire across a hole in the PCB.

: Used to indicate a test point with a component lead on foil side.

: Used to indicate a test point with no test pin.

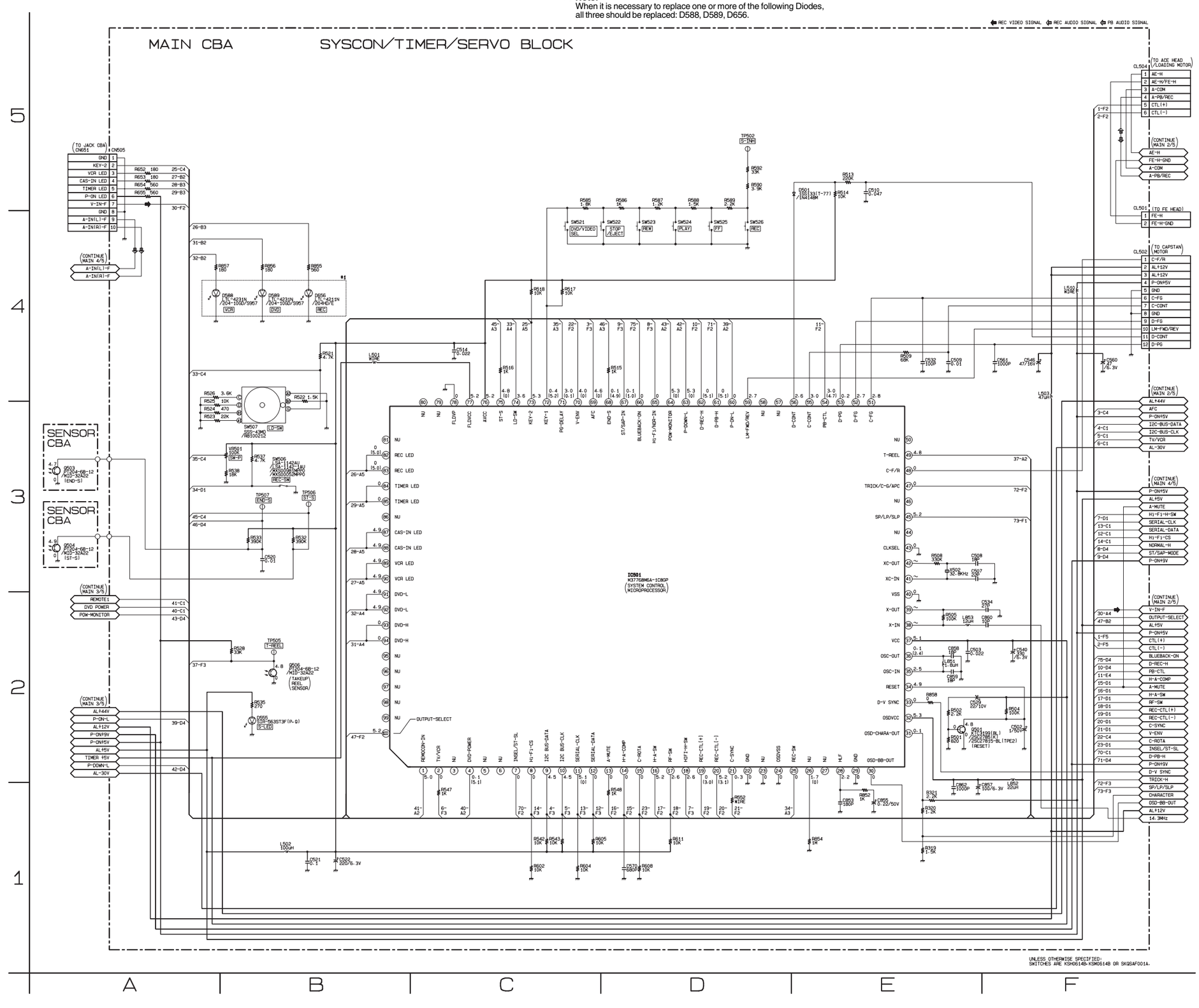
: Used to indicate a test point with a test pin.

VCR SECTION
Wiring Diagram

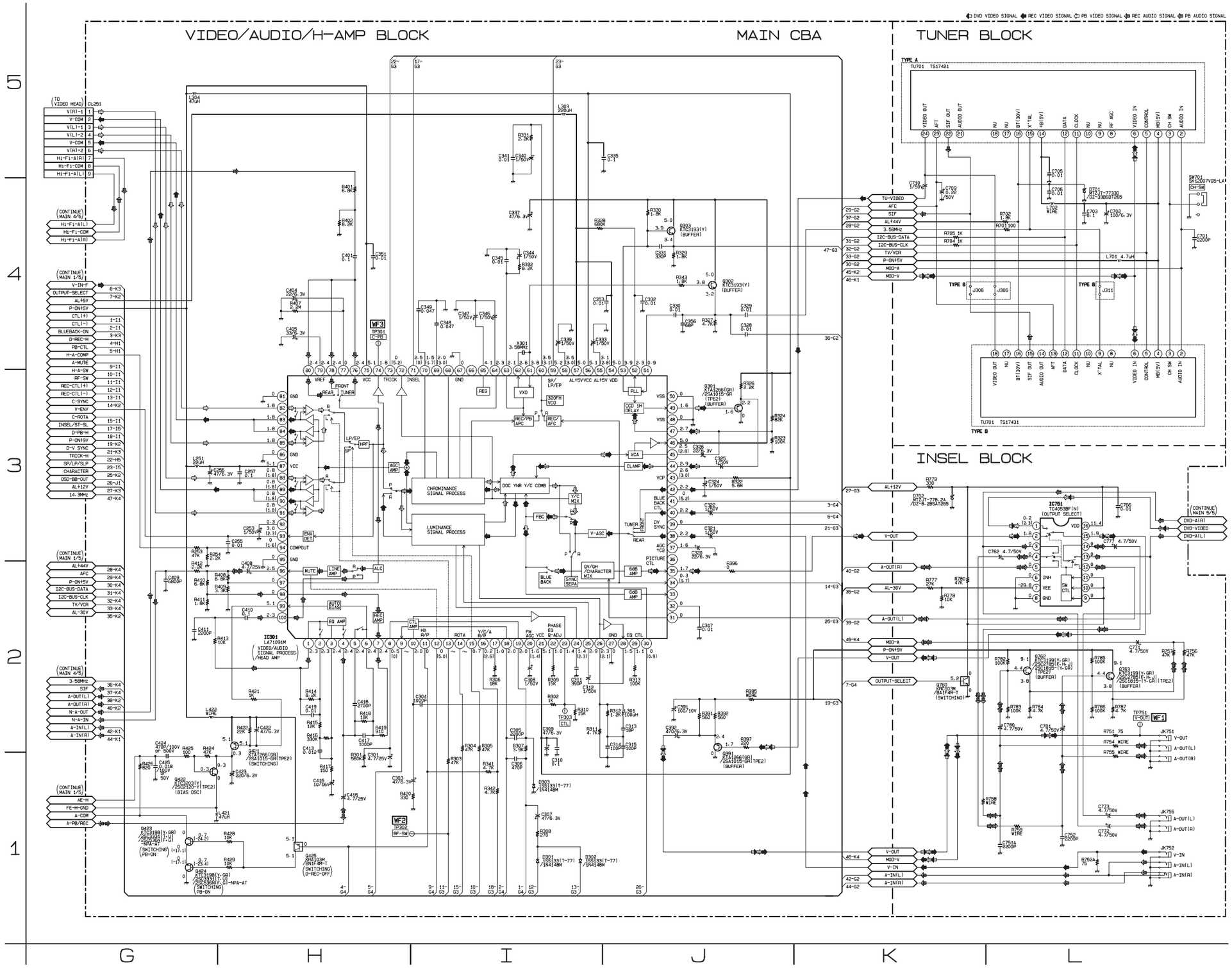


Main 1/5 Schematic Diagram

★1 Note:
When it is necessary to replace one or more of the following Diodes, all three should be replaced: D588, D589, D656.



Main 2/5 Schematic Diagram



★2 **Note:**
There are two types of tuner unit (TU701) : A and B.
These types are compatible, and there is no problem when using either, but it is recommended that you replace the unit with the same type if possible.
The following table shows the differences between types A and B:

	TU701	J306	J308	J311
TYPE A	TS17421	NU	NU	NU
TYPE B	TS17431	WIRE	WIRE	WIRE

NU: Not Used

WAVEFORMS

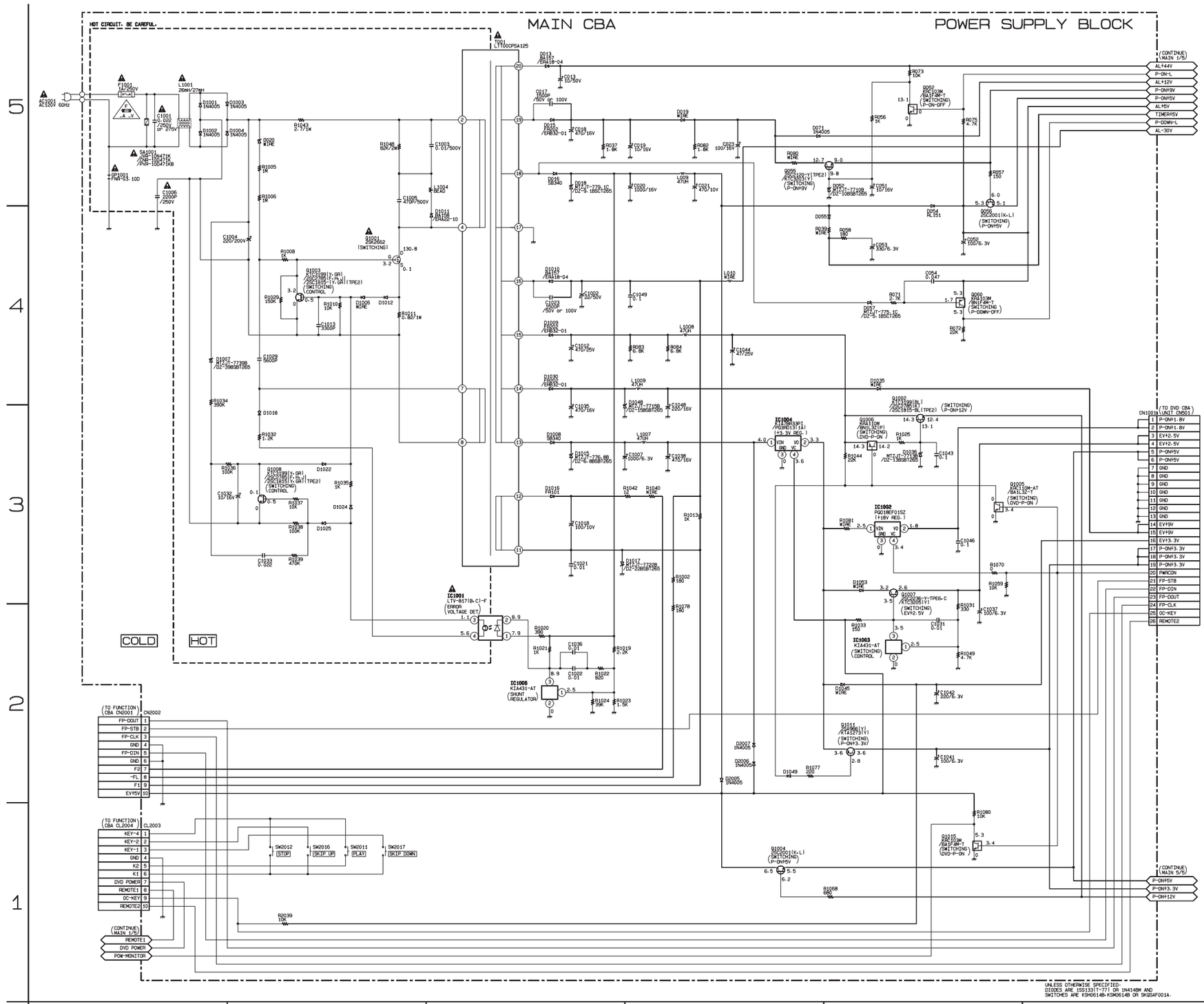
Main 3/5 Schematic Diagram

CAUTION!
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

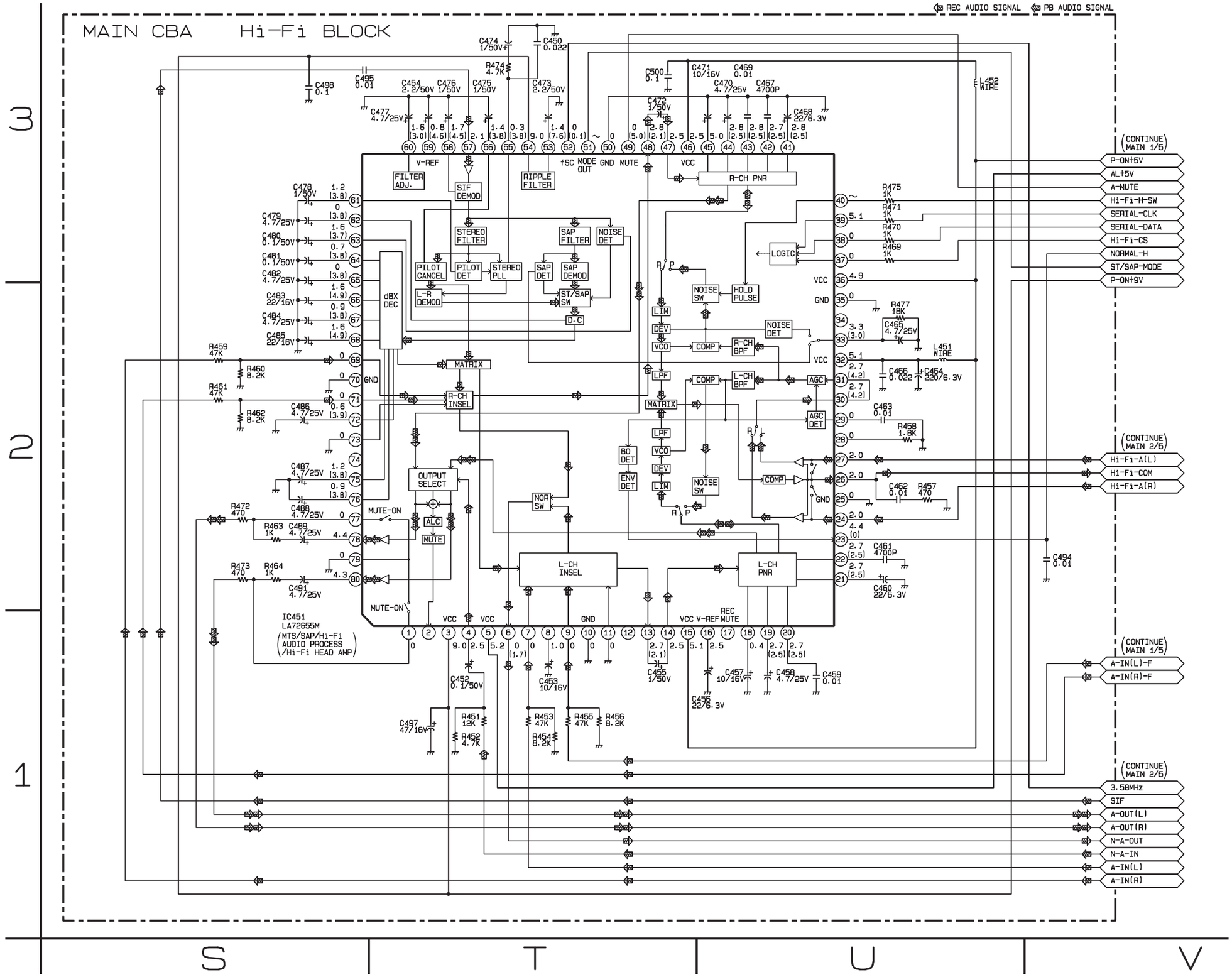
NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

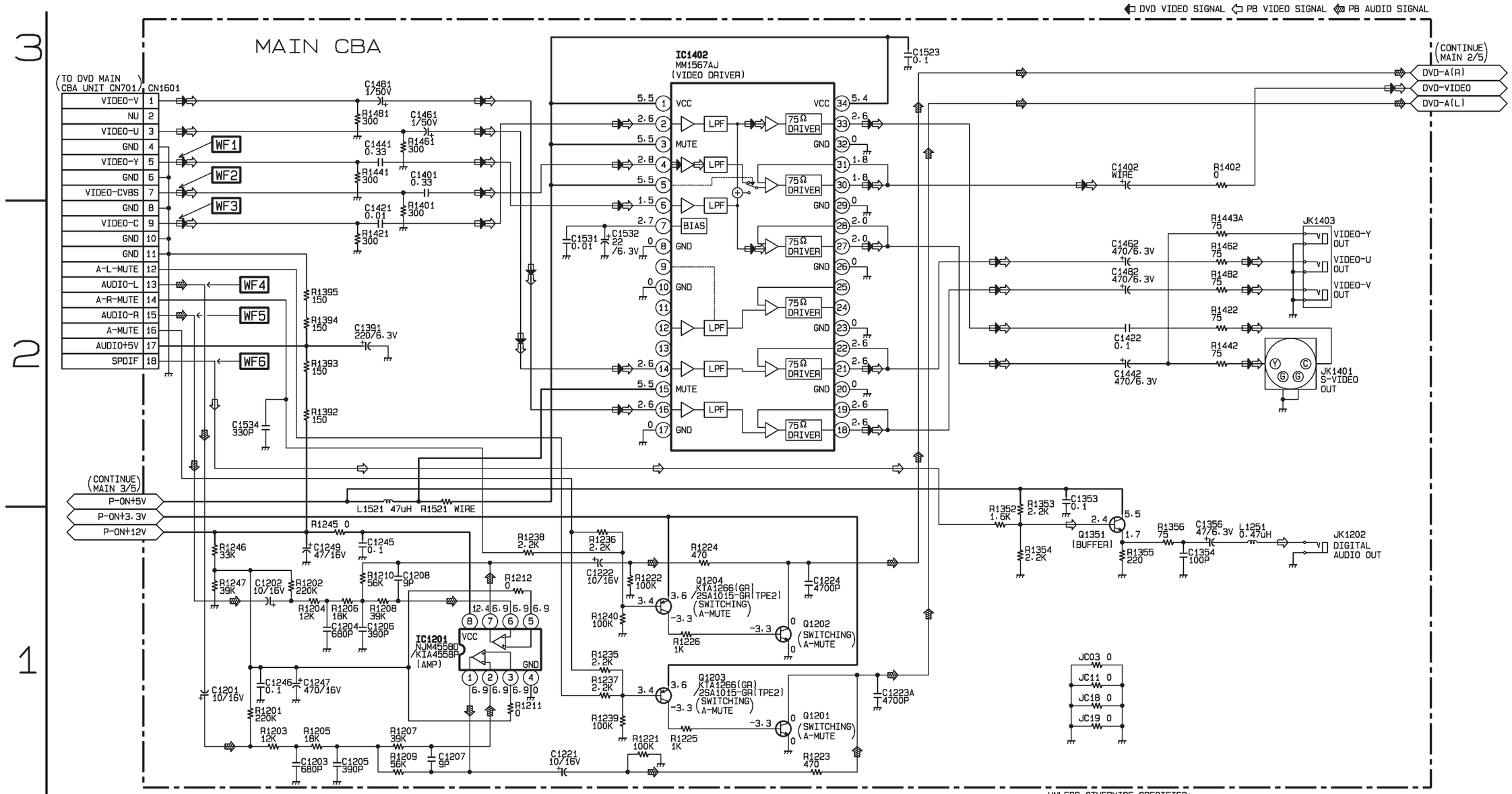
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."



Main 4/5 Schematic Diagram

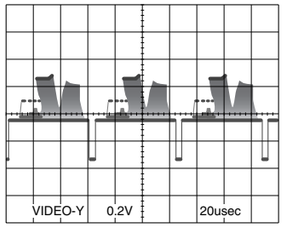


Main 5/5 Schematic Diagram

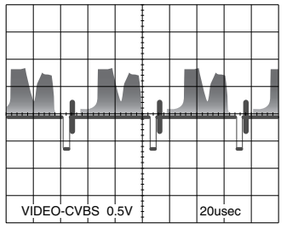


Waveforms

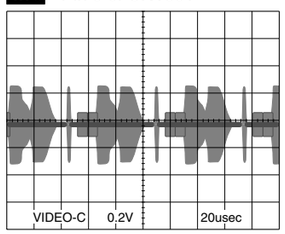
WF1 Pin 5 of CN1601



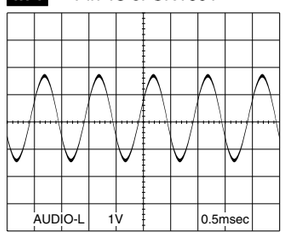
WF2 Pin 7 of CN1601



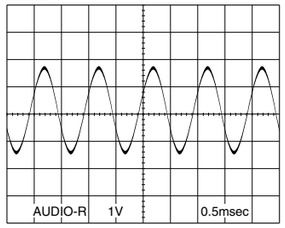
WF3 Pin 9 of CN1601



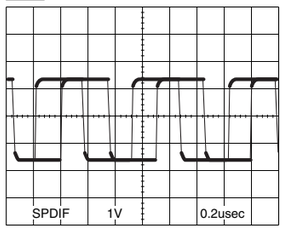
WF4 Pin 13 of CN1601



WF5 Pin 15 of CN1601



WF6 Pin 18 of CN1601

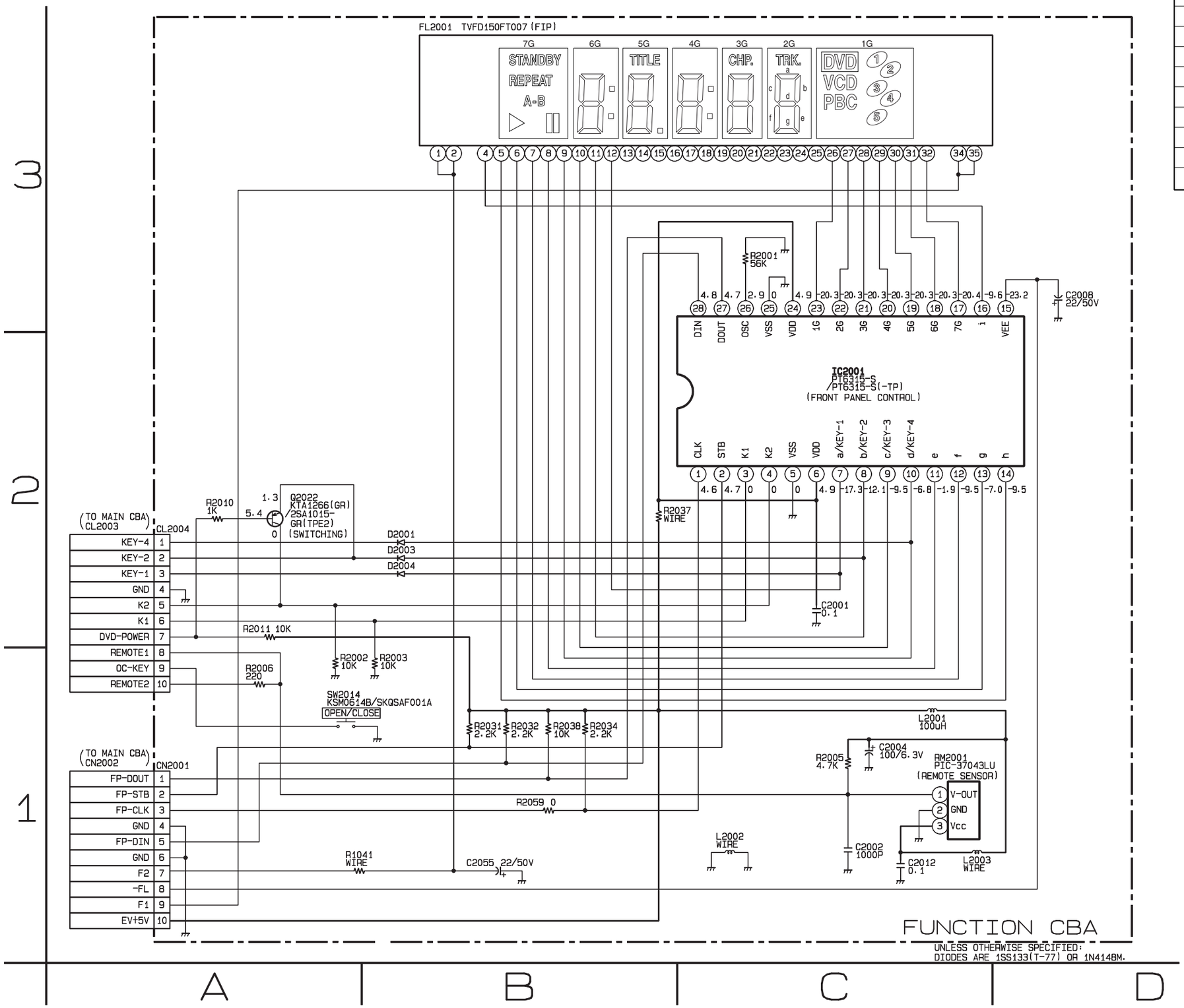


NOTE:
Input
CD: 1kHz PLAY
(WF4~WF6)
DVD: POWER ON (STOP) MODE
(WF1~WF3)

Function Schematic Diagram

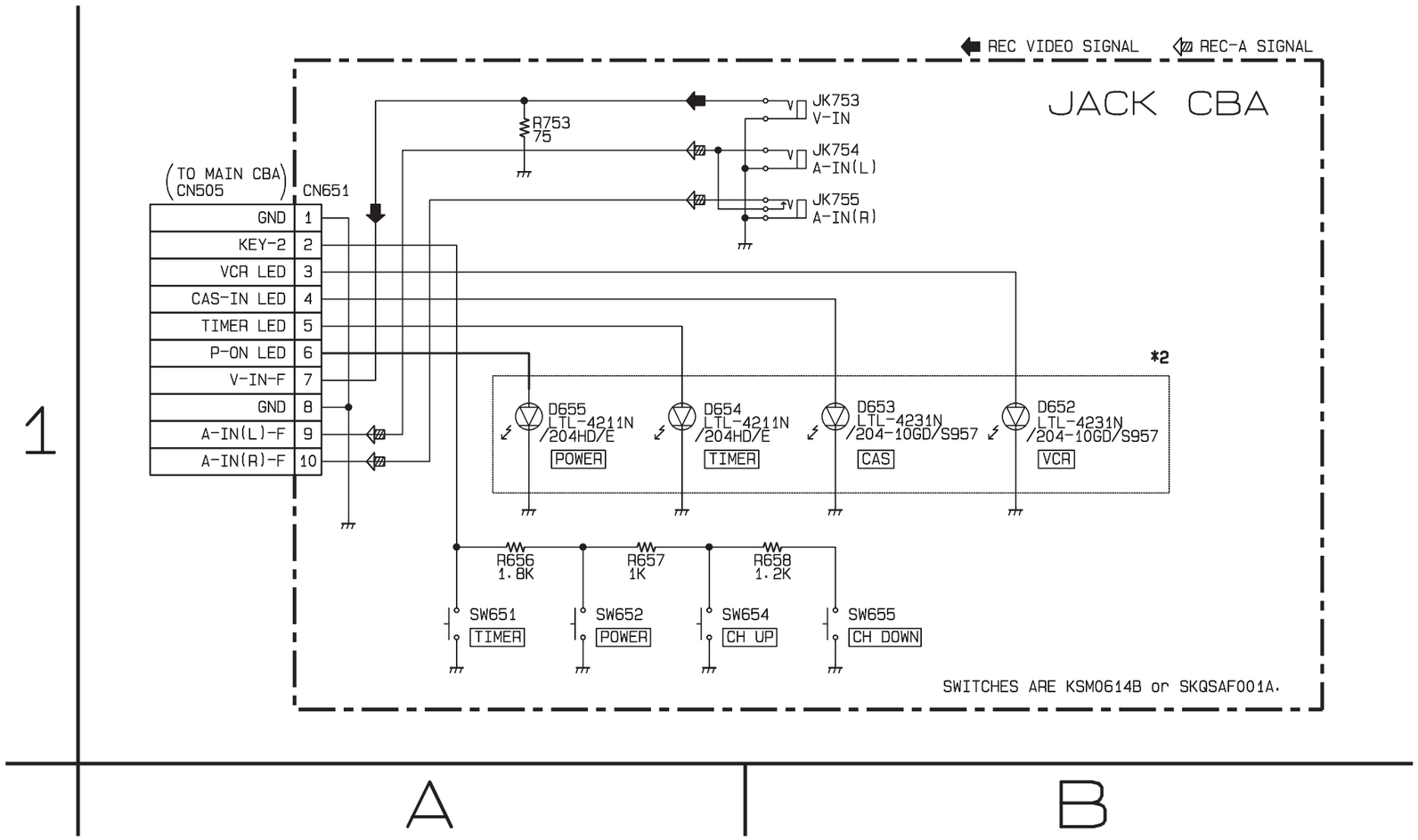
FL2001 MATRIX CHART

	7G	6G	5G	4G	3G	2G	1G
a	STANDBY	a	a	a	a	a	①
b	REPEAT	b	b	b	b	b	②
c	A	c	c	c	c	c	③
d	▫B	d	d	d	d	d	④
e	▷	e	e	e	e	e	⑤
f	▯▯	f	f	f	f	f	DVD
g	——	g	g	g	g	g	PBC
h	——	▫ ▫	TITLE	▫ ▫	CHP.	TRK.	CD
i	——	——	▫	——	——	——	V



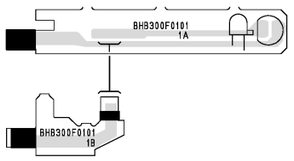
Jack Schematic Diagram

*2 **Note:**
When it is necessary to replace one or more of the following Diodes, all four should be replaced: D652, D653, D654, D655.



Main CBA Top View

Sensor CBA Top View



CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

WF1
TP751
V-OUT

TP303
CTL

WF5
TP301
C-PB

WF2
TP302
RF-SW

TP502
S-INH

VR501
SW-P

Main CBA Bottom View

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

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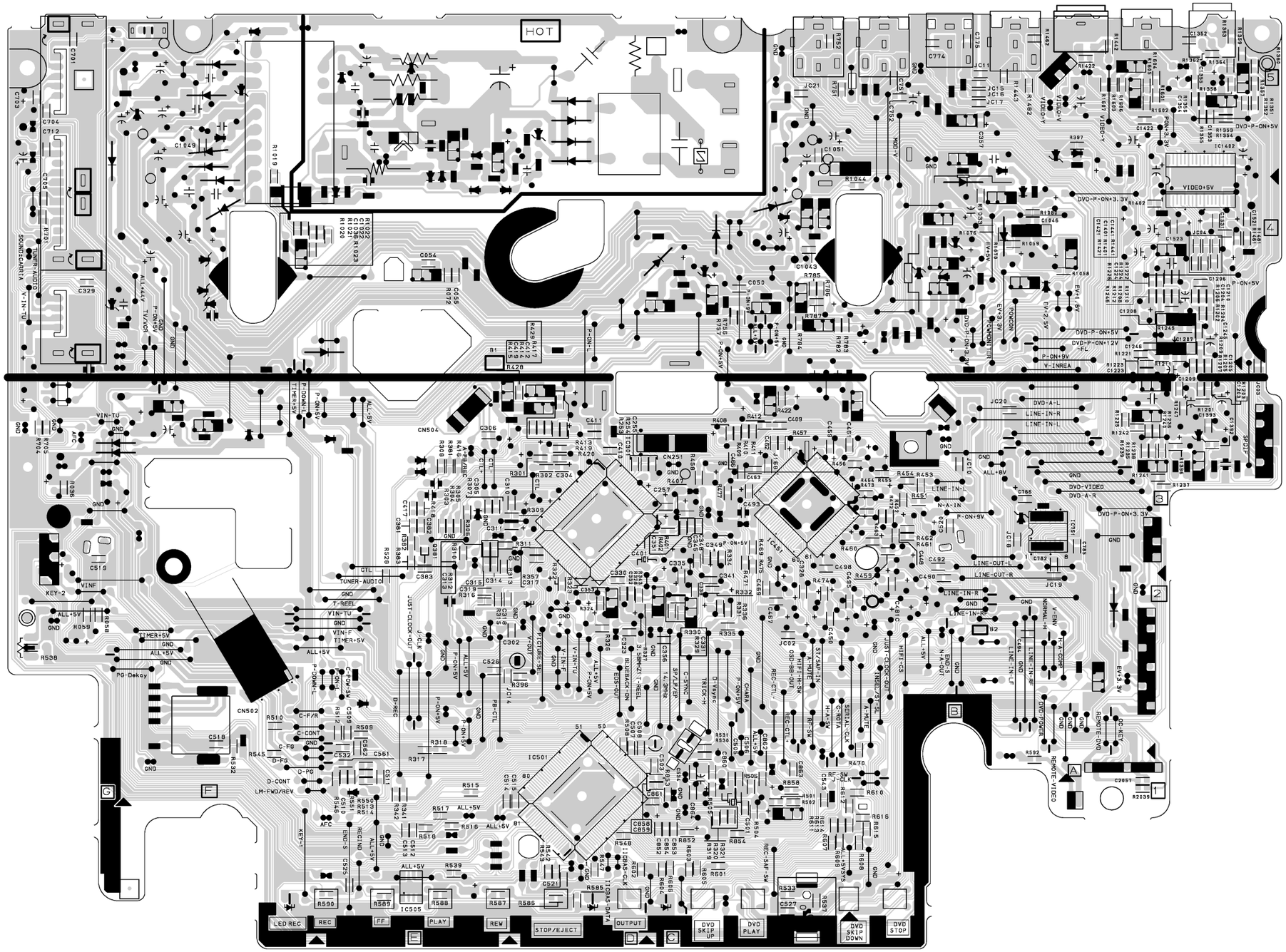
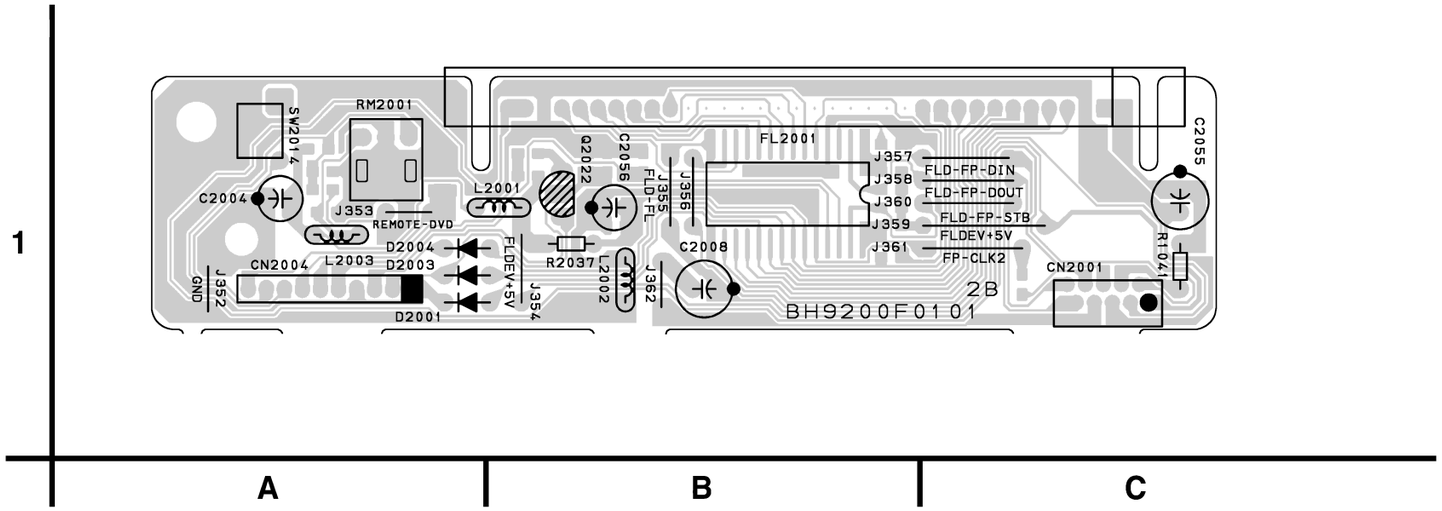
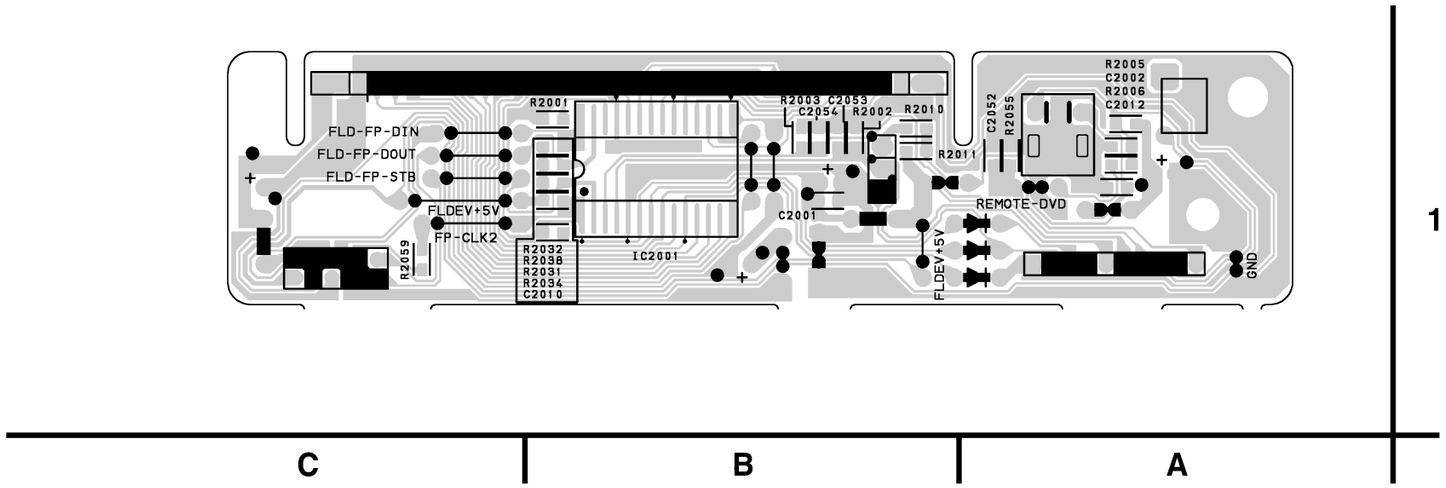


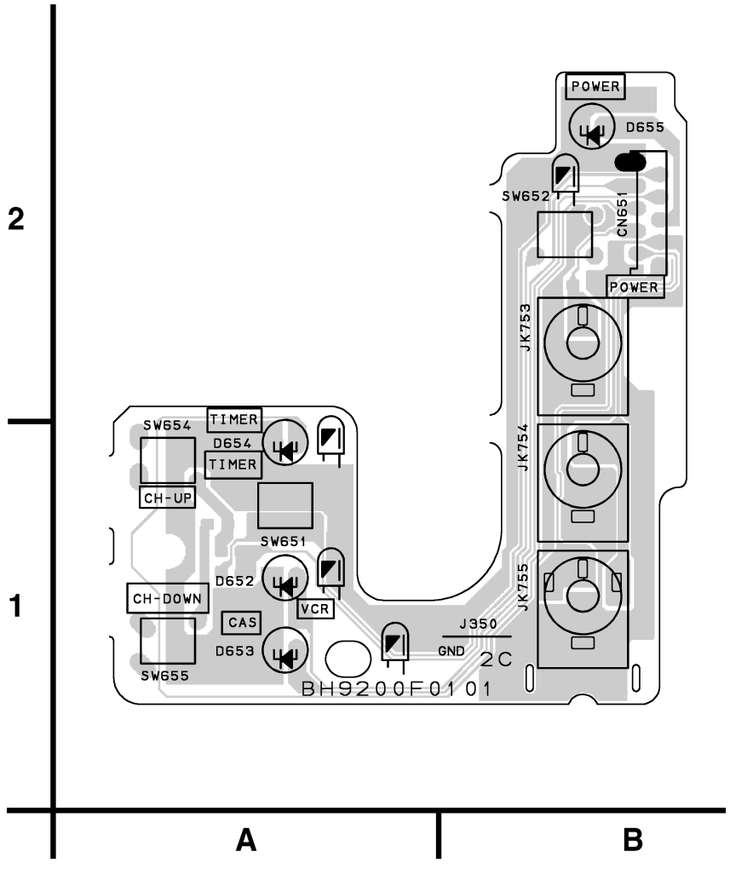
Function CBA Top View



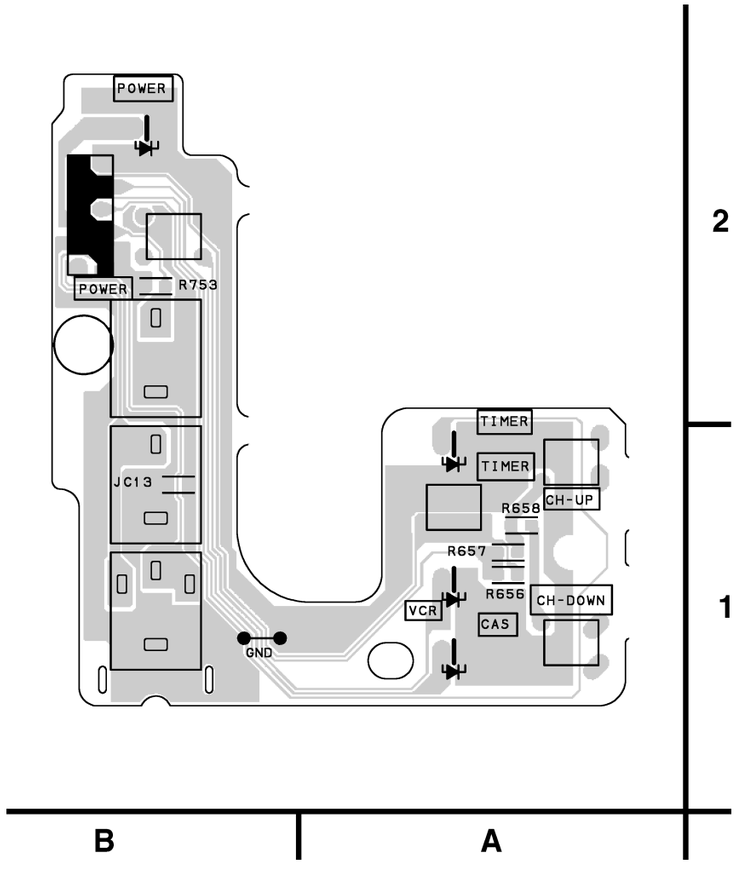
Function CBA Bottom View



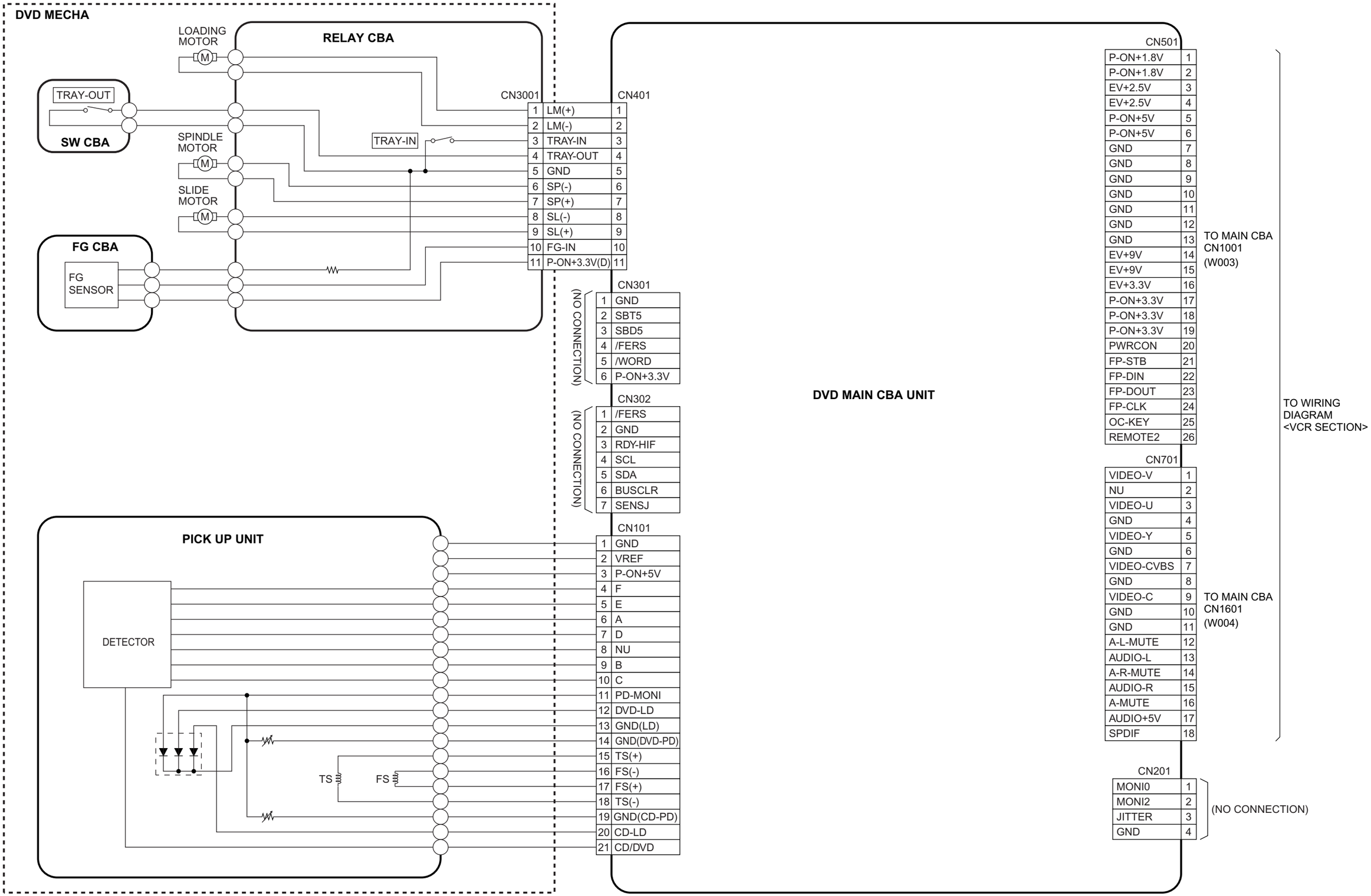
Jack CBA Top View



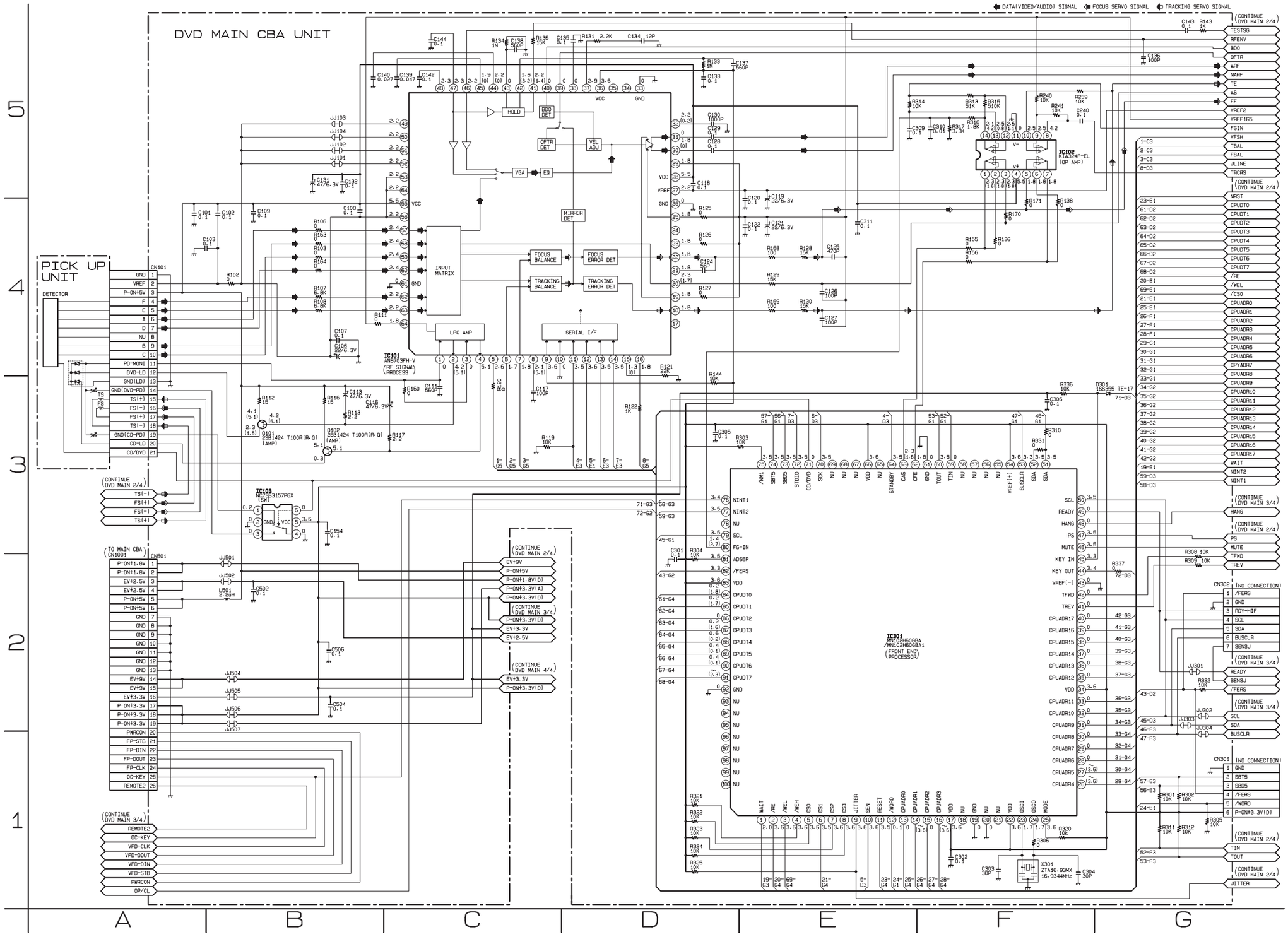
Jack CBA Bottom View



DVD SECTION
Wiring Diagram

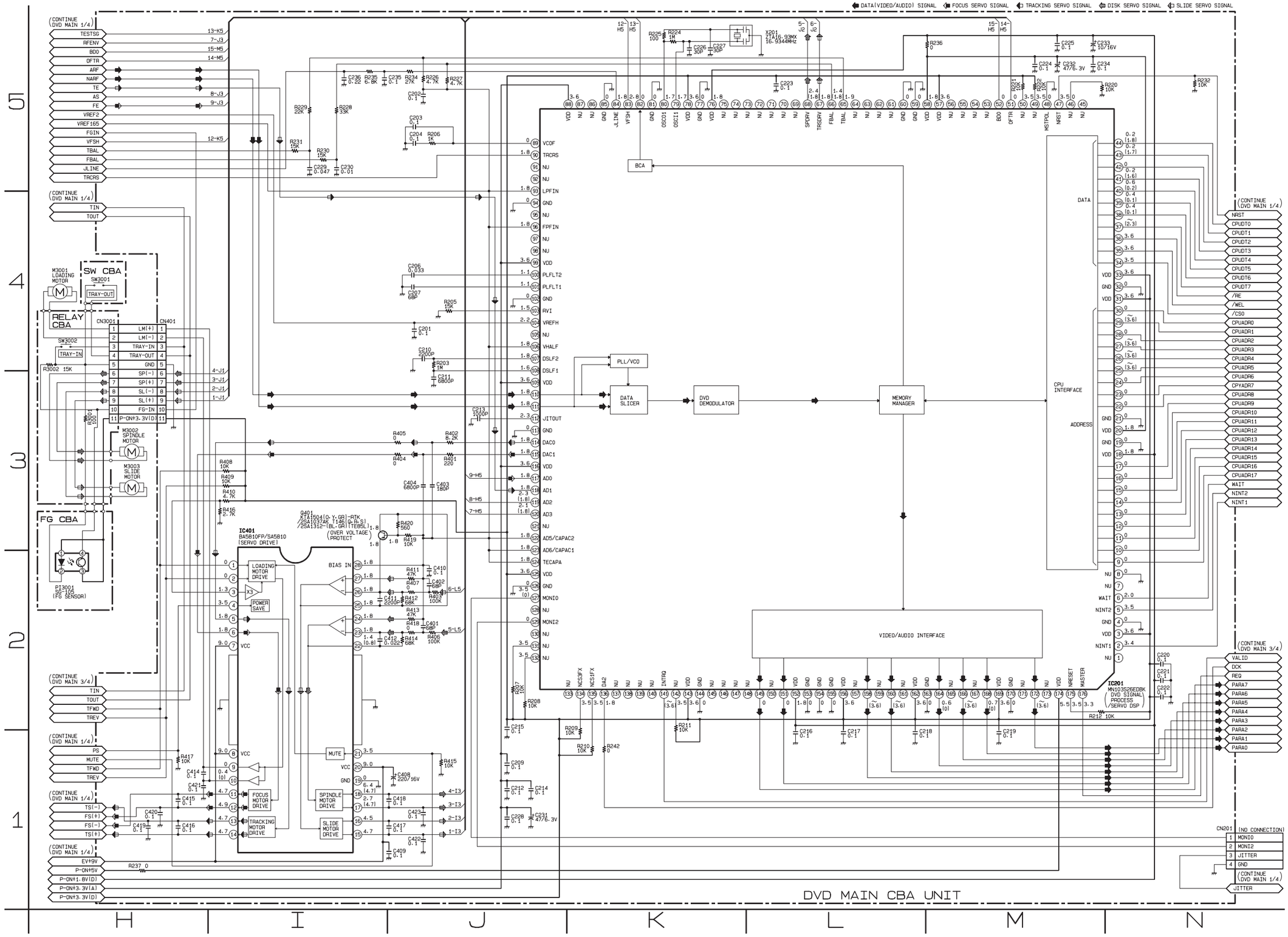


DVD Main 1/4 Schematic Diagram

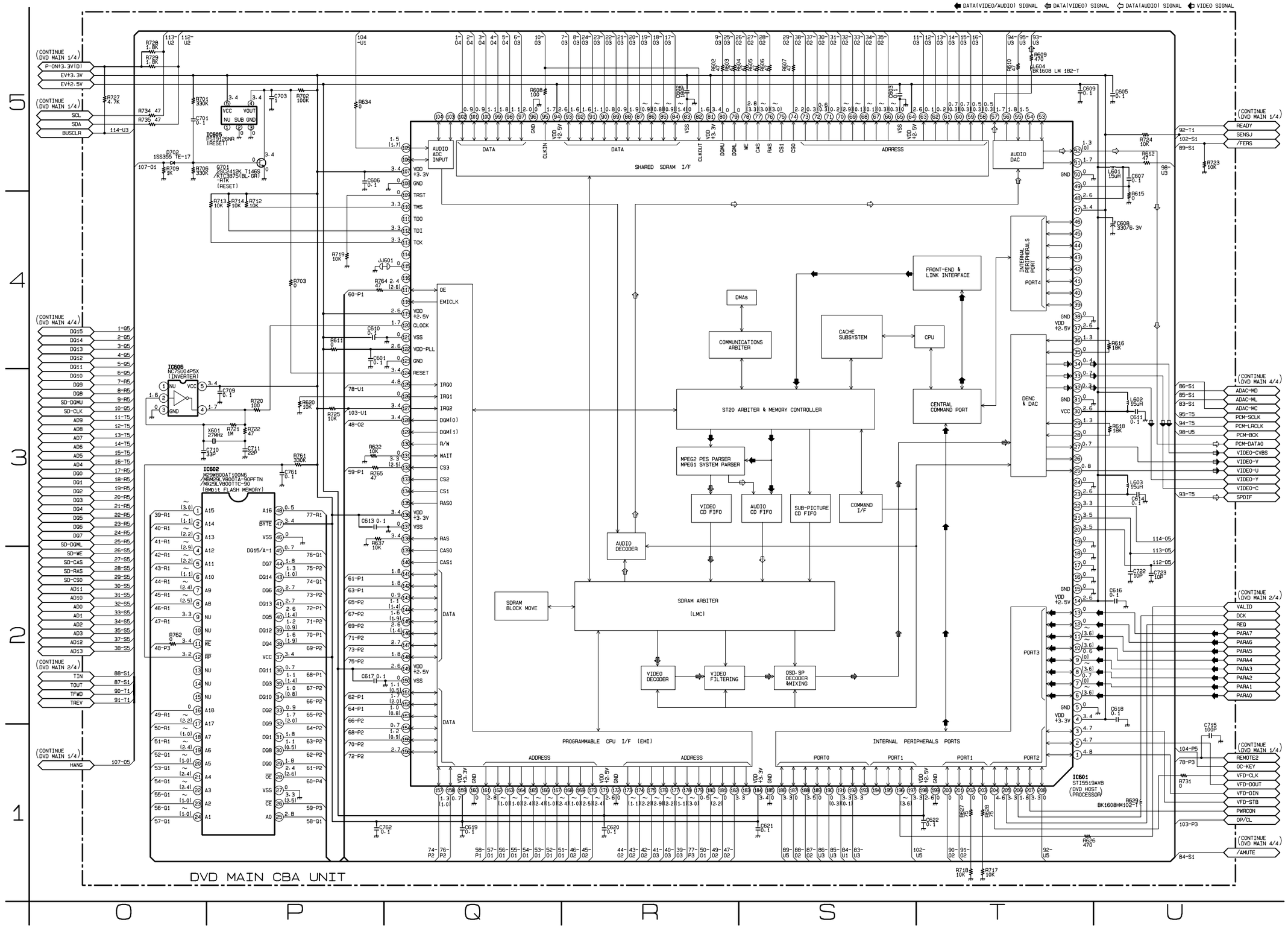


4-1-17

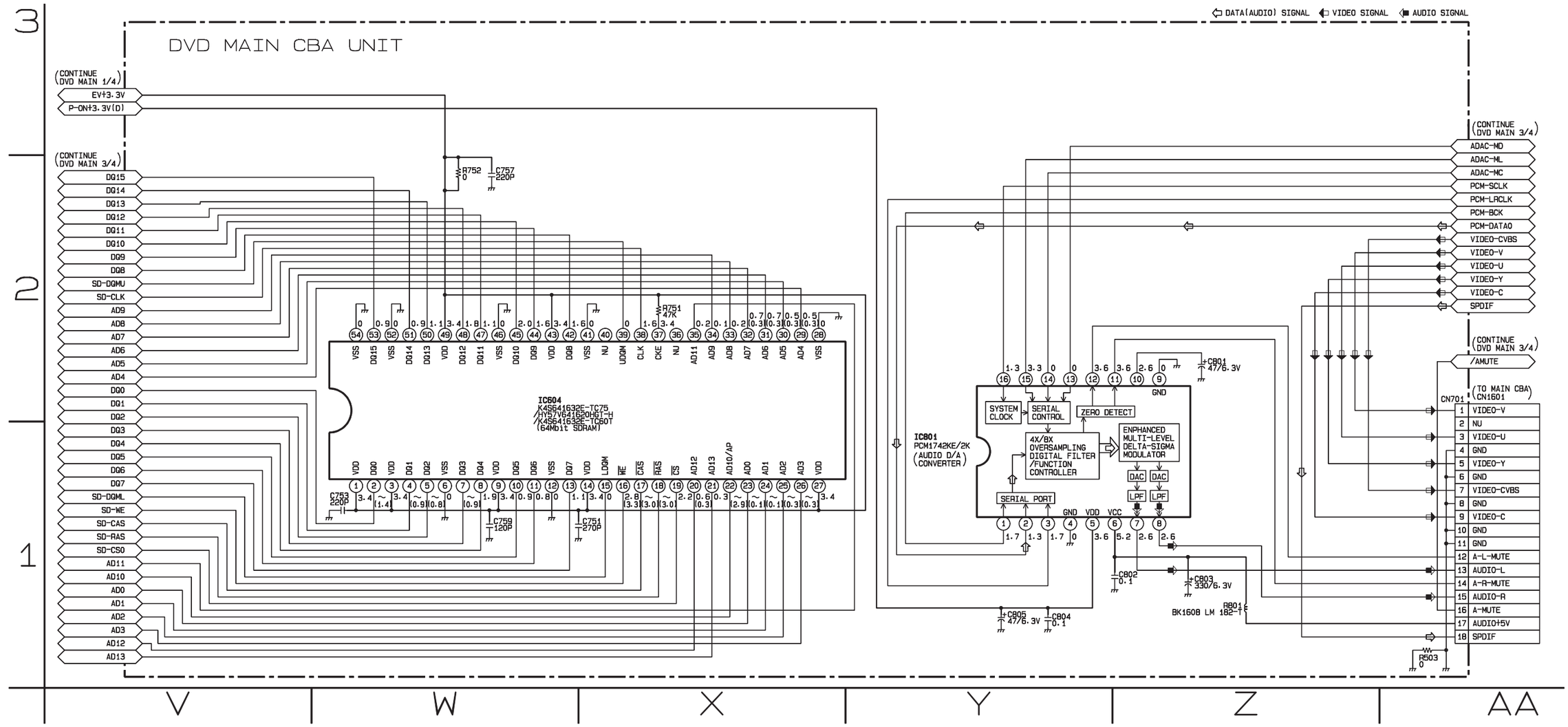
DVD Main 2/4 Schematic Diagram



DVD Main 3/4 Schematic Diagram

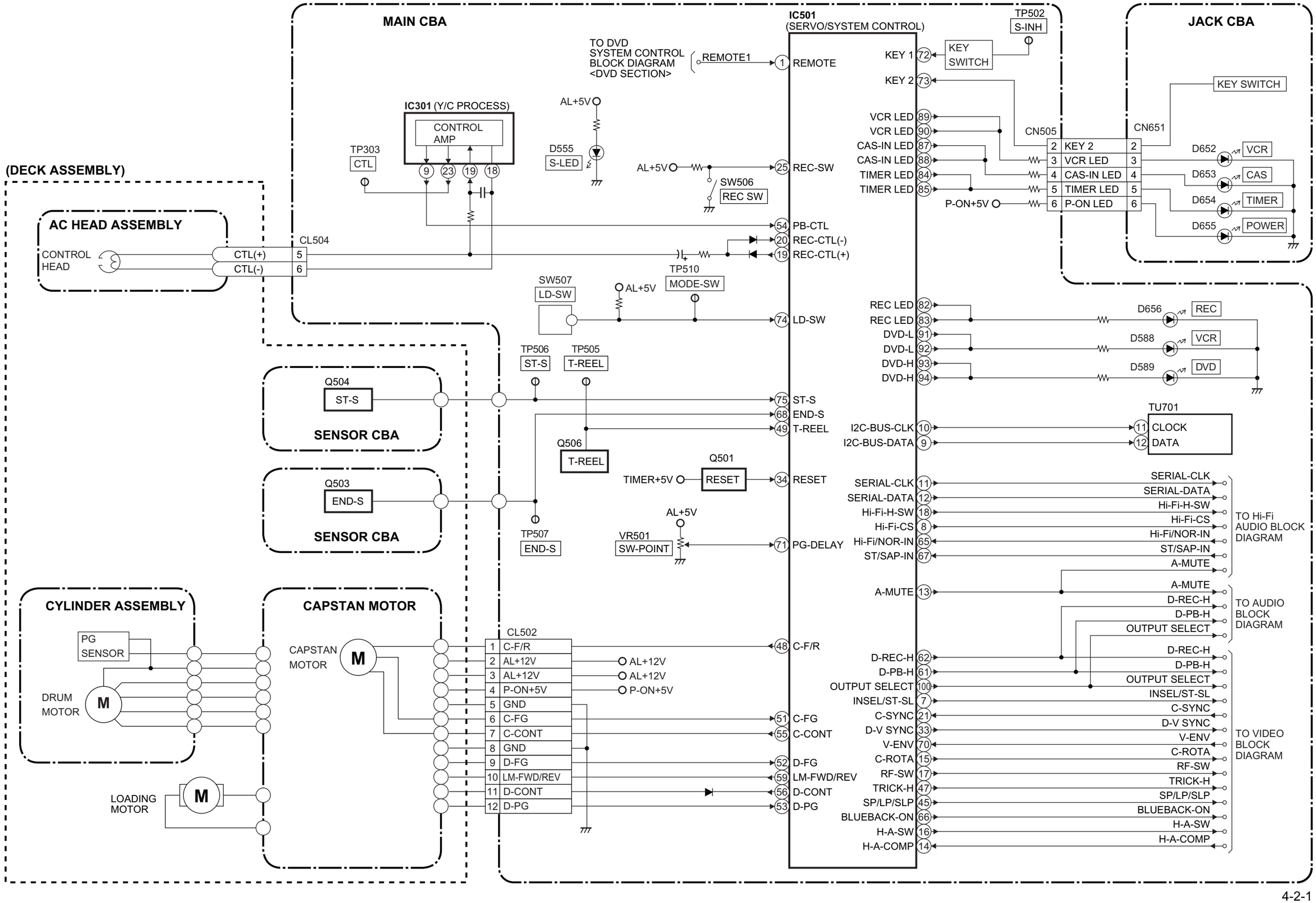


DVD Main 4/4 Schematic Diagram



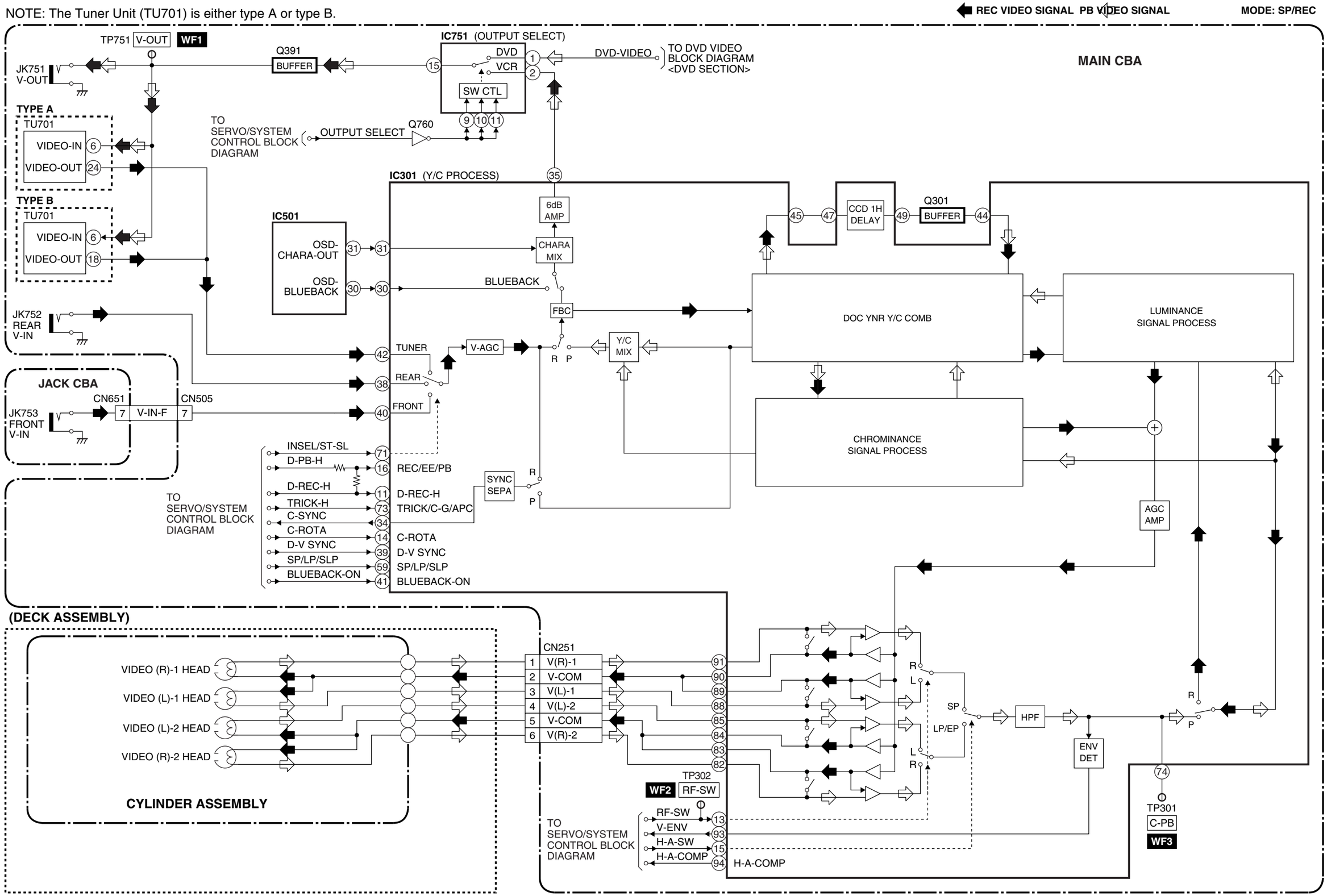
BLOCK DIAGRAMS < VCR SECTION >

Servo/System Control Block Diagram



Video Block Diagram

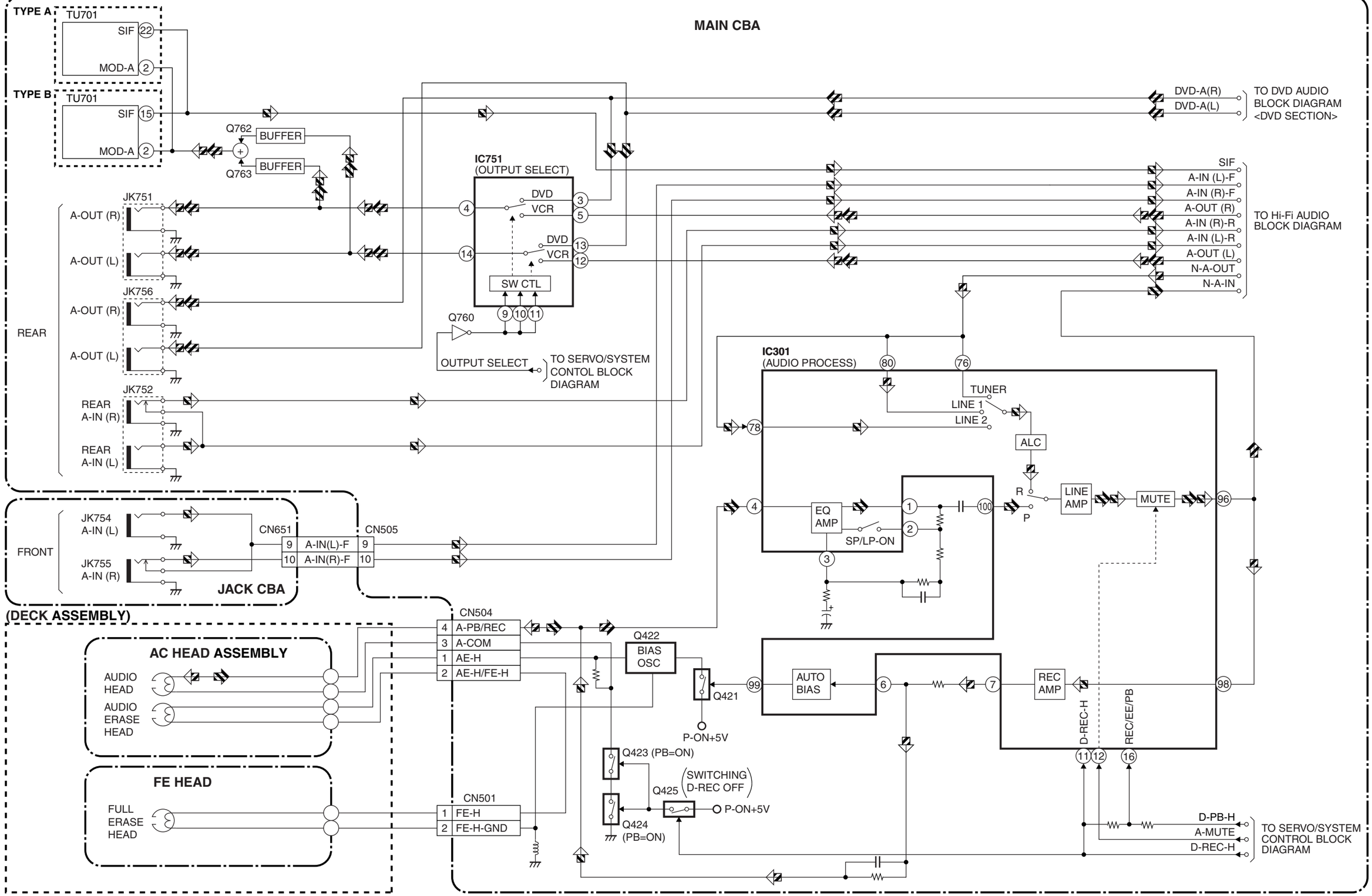
NOTE: The Tuner Unit (TU701) is either type A or type B.



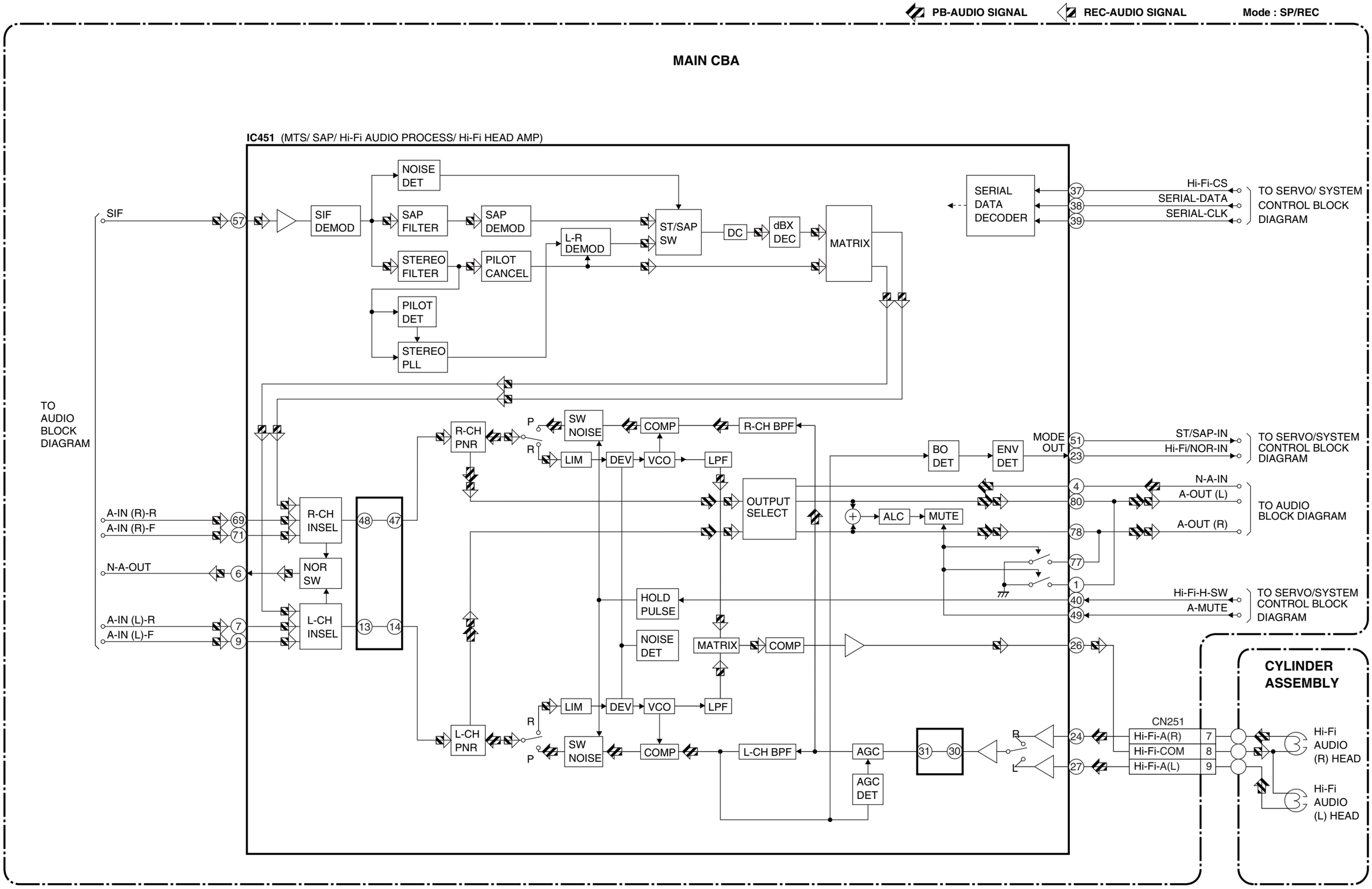
Audio Block Diagram

NOTE: The Tuner Unit (TU701) is either type A or type B.

PB-AUDIO SIGNAL REC-AUDIO SIGNAL Mode : SP/REC



Hi-Fi Audio Block Diagram



Power Supply Block Diagram

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE -REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
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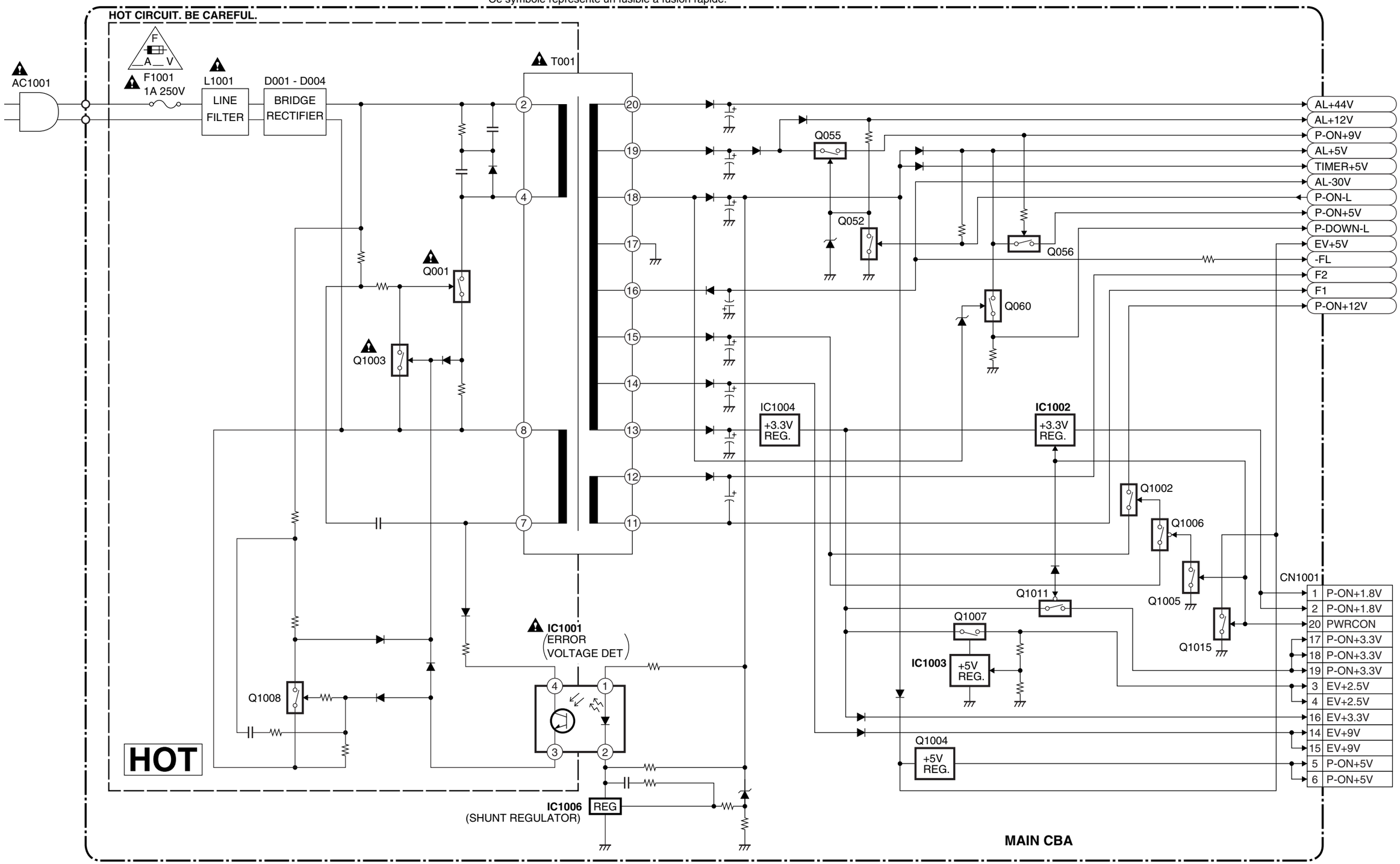
CAUTION !

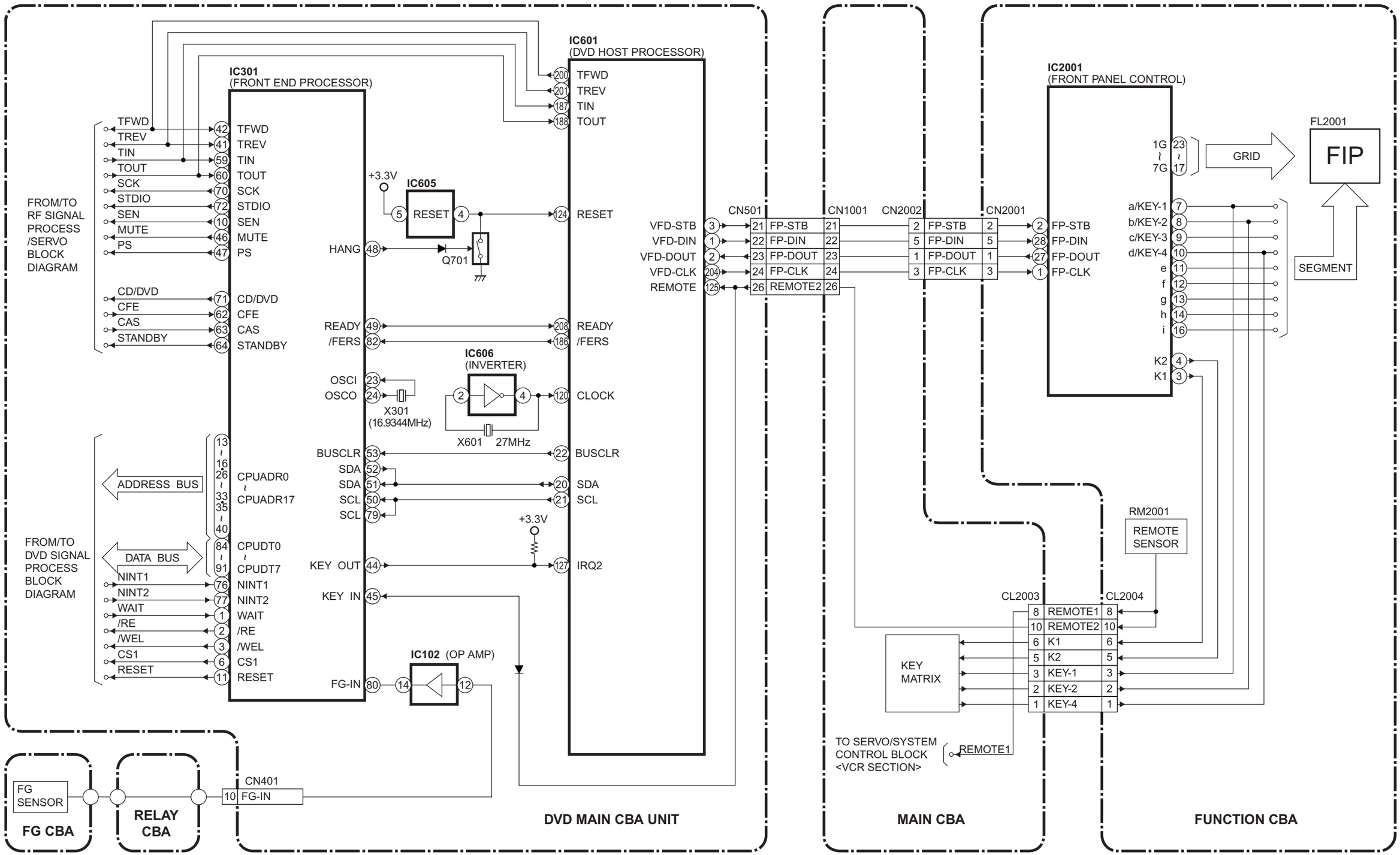
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

Fixed voltage power supply circuit is used in this unit.

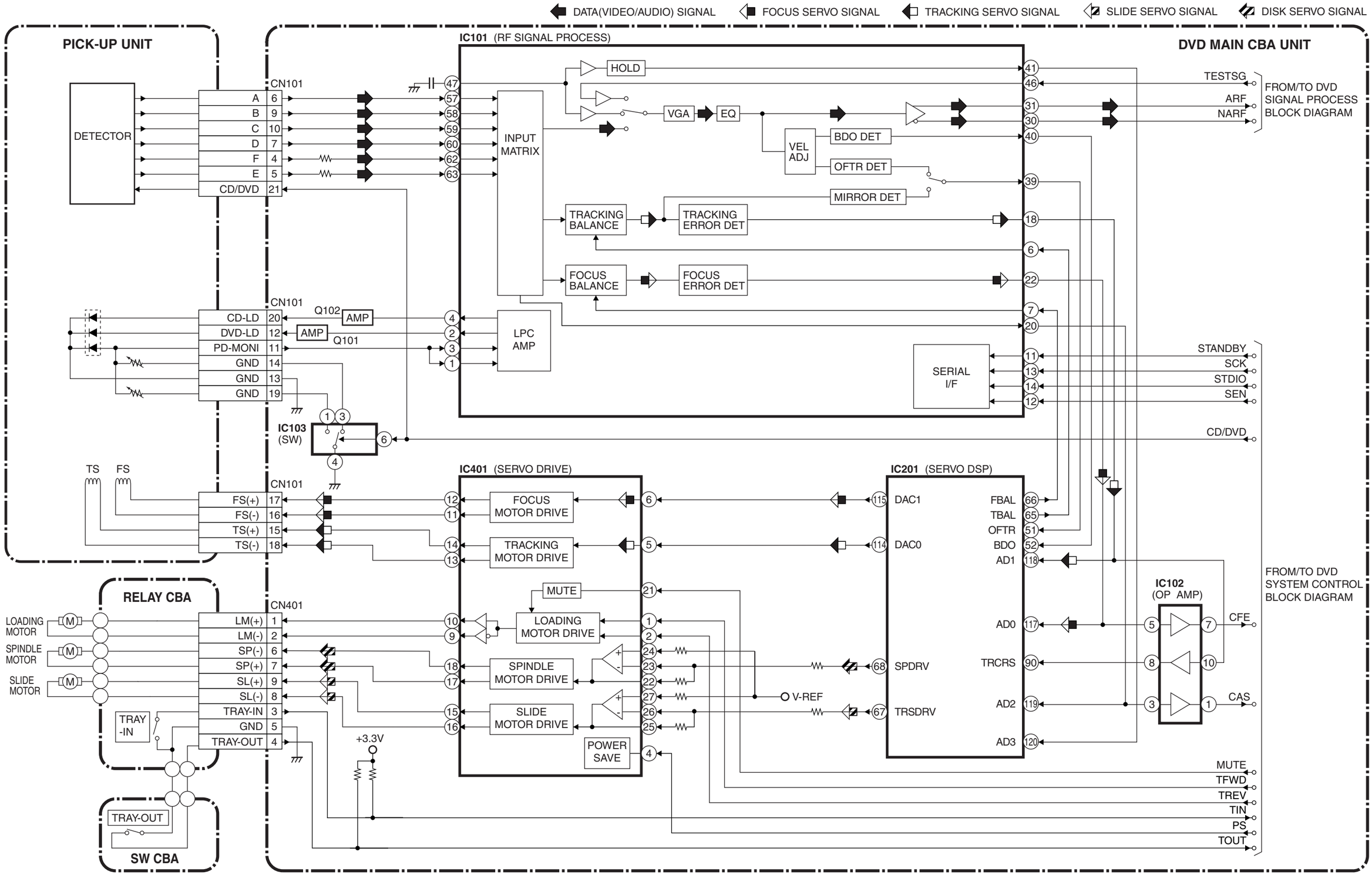


BLOCK DIAGRAMS < DVD SECTION >

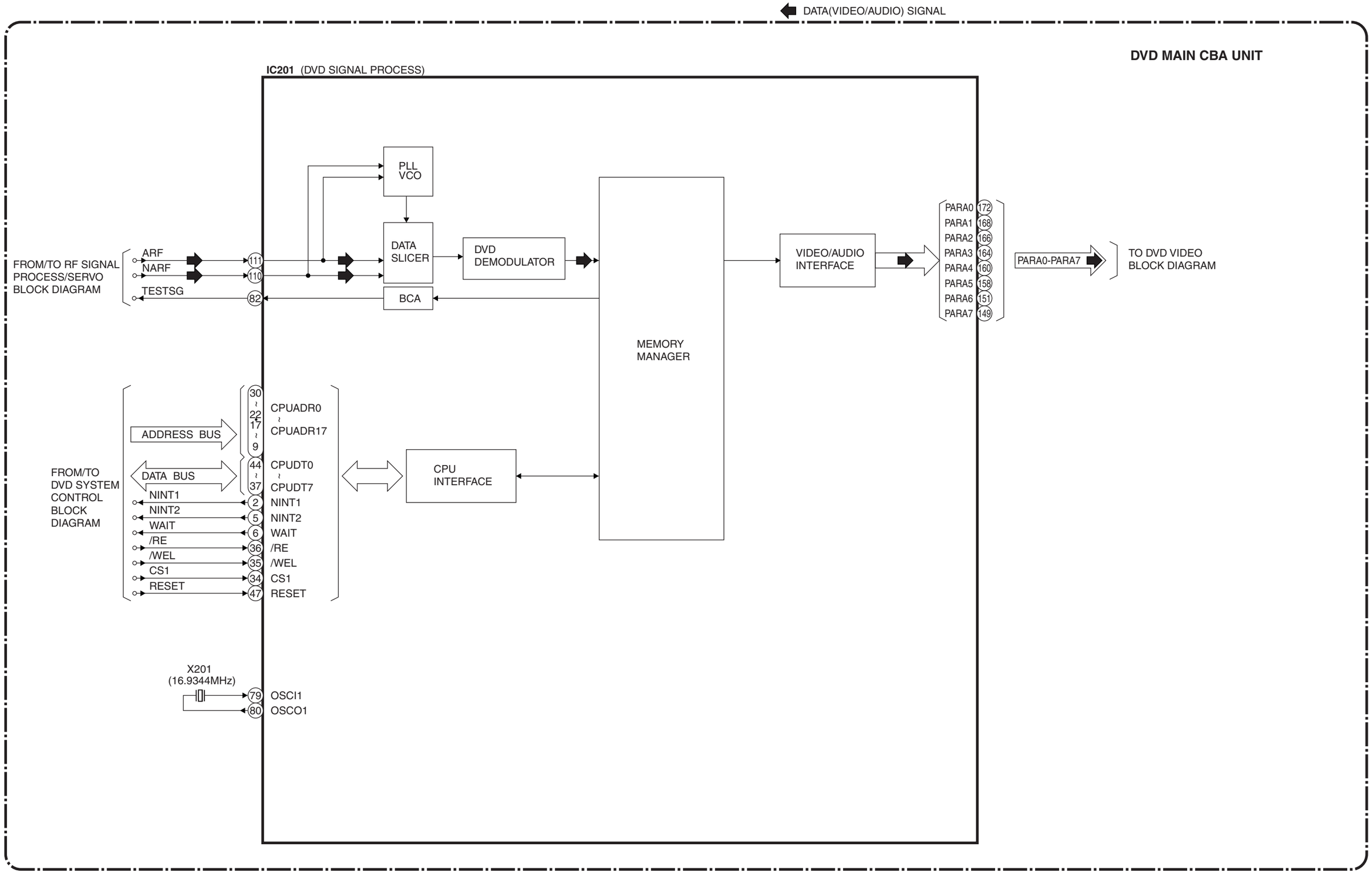
DVD System Control Block Diagram



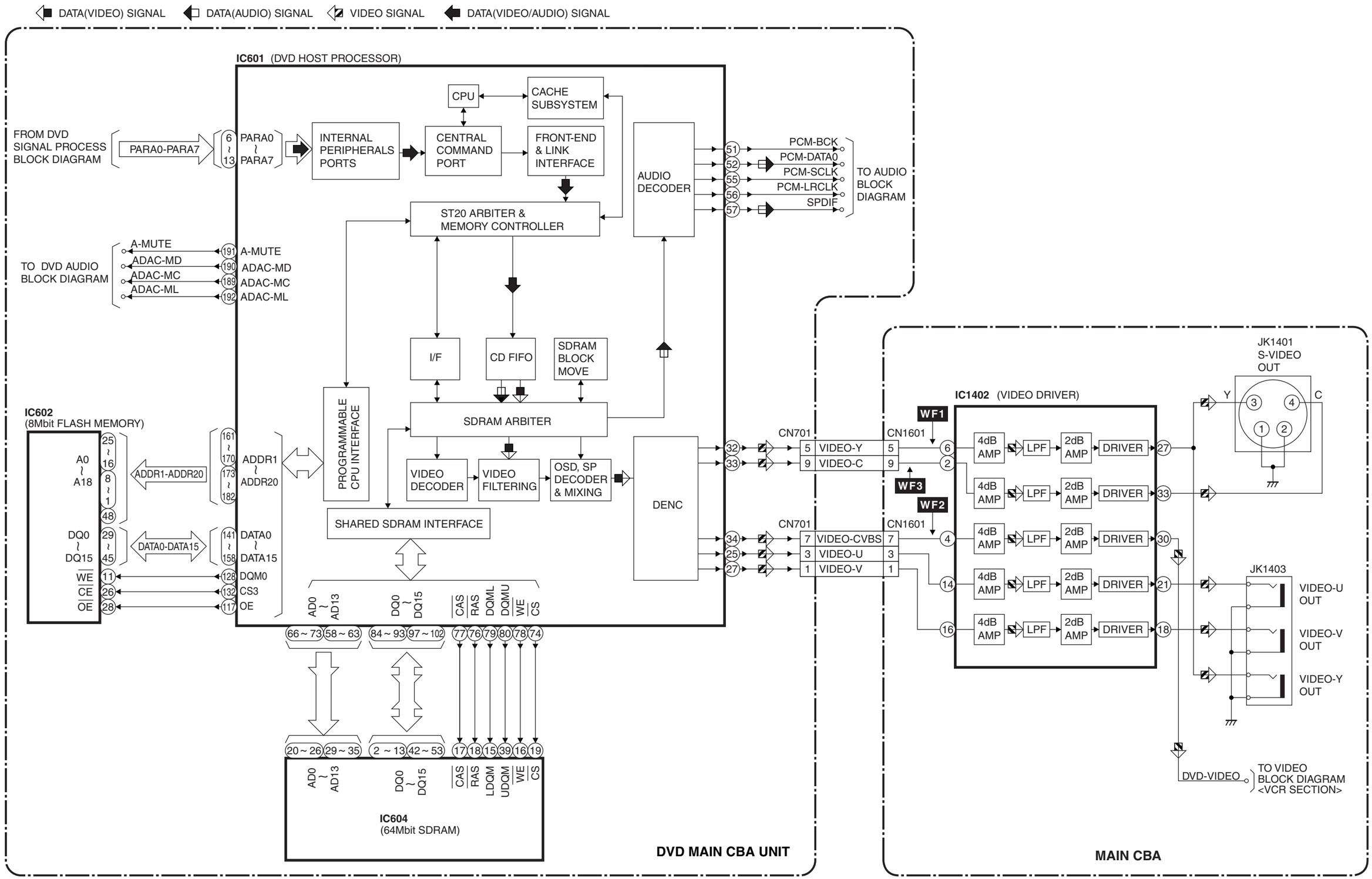
RF Signal Process/Servo Block Diagram



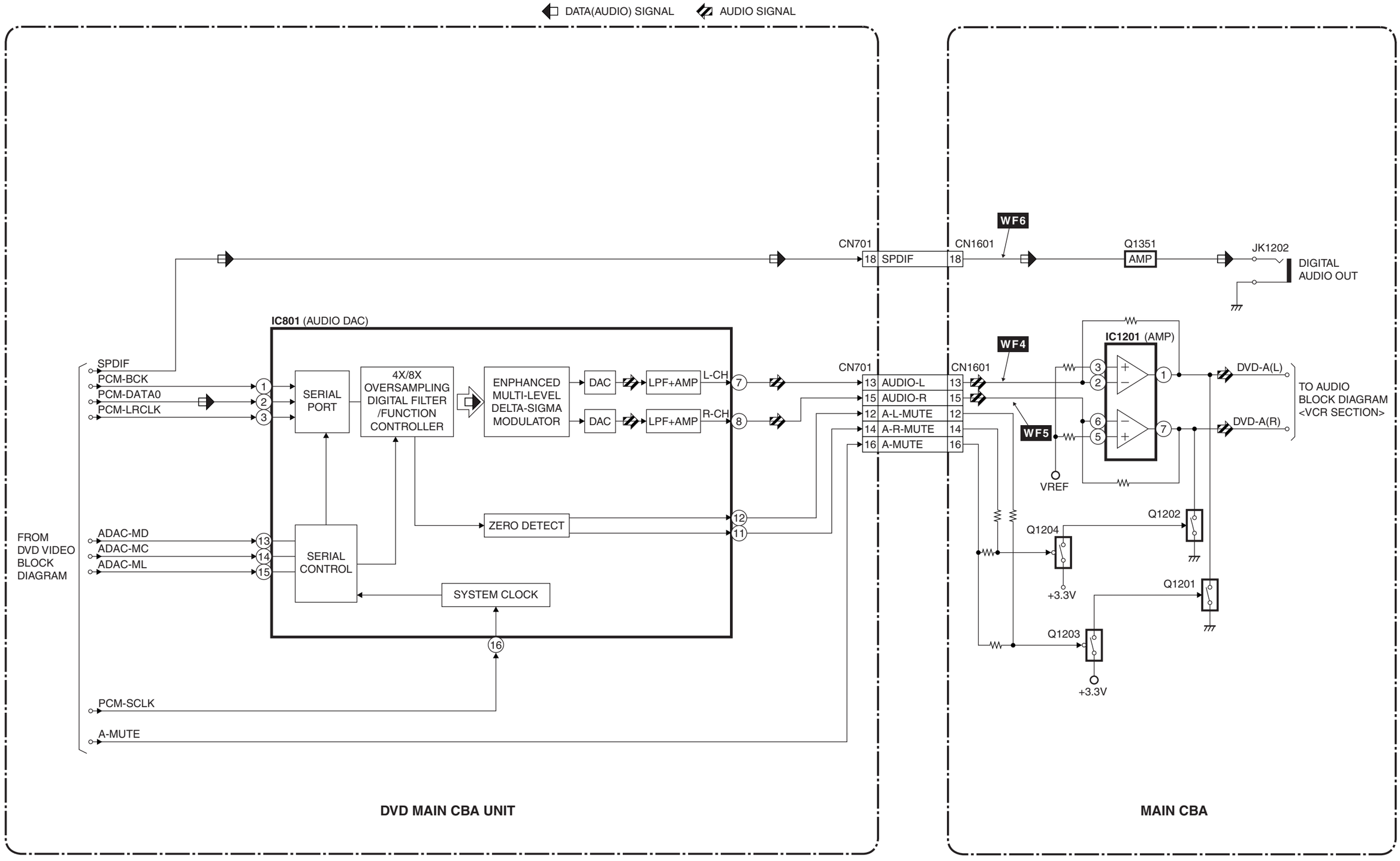
DVD Signal Process Block Diagram



DVD Video Block Diagram



DVD Audio Block Diagram



SYSTEM CONTROL TIMING CHARTS

[VCR Section]

Mode SW : LD-SW

LD-SW Position detection A/D Input voltage Limit (Calculated voltage)	Symbol
3.76V~4.50V (4.12V)	EJ
4.51V~5.00V (5.00V)	CL
0.00V~0.25V (0.00V)	SB
1.06V~1.50V (1.21V)	TL
0.66V~1.05V (0.91V)	FB
1.99V~2.60V (2.17V)	SF
1.51V~1.98V (1.80V)	AU
3.20V~3.75V (3.40V)	AL
0.26V~0.65V (0.44V)	SS
4.51V~5.00V (5.00V)	GC
2.61V~3.19V (2.97V)	RS

Note:

Note :

EJ ⟶ RS: Loading FWD (LM-FWD “H”, LM-REV “L”)

RS ⟶ EJ: Loading REV (LM-FWD “L”, LM-REV “H”)

Stop (A) = Loading

Stop (B) = Unloading

Note :

Symbol	Loading Status
EJ	Eject
CL	Eject ~ REW Reel
SB	REW Reel ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
FB	Brake Cancel
SF	~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ Still / Slow
SS	Still / Slow ~ Capstan Reversal
GC	Capstan Reversal ~ RS (REW Search)
RS	RS (REW Search)

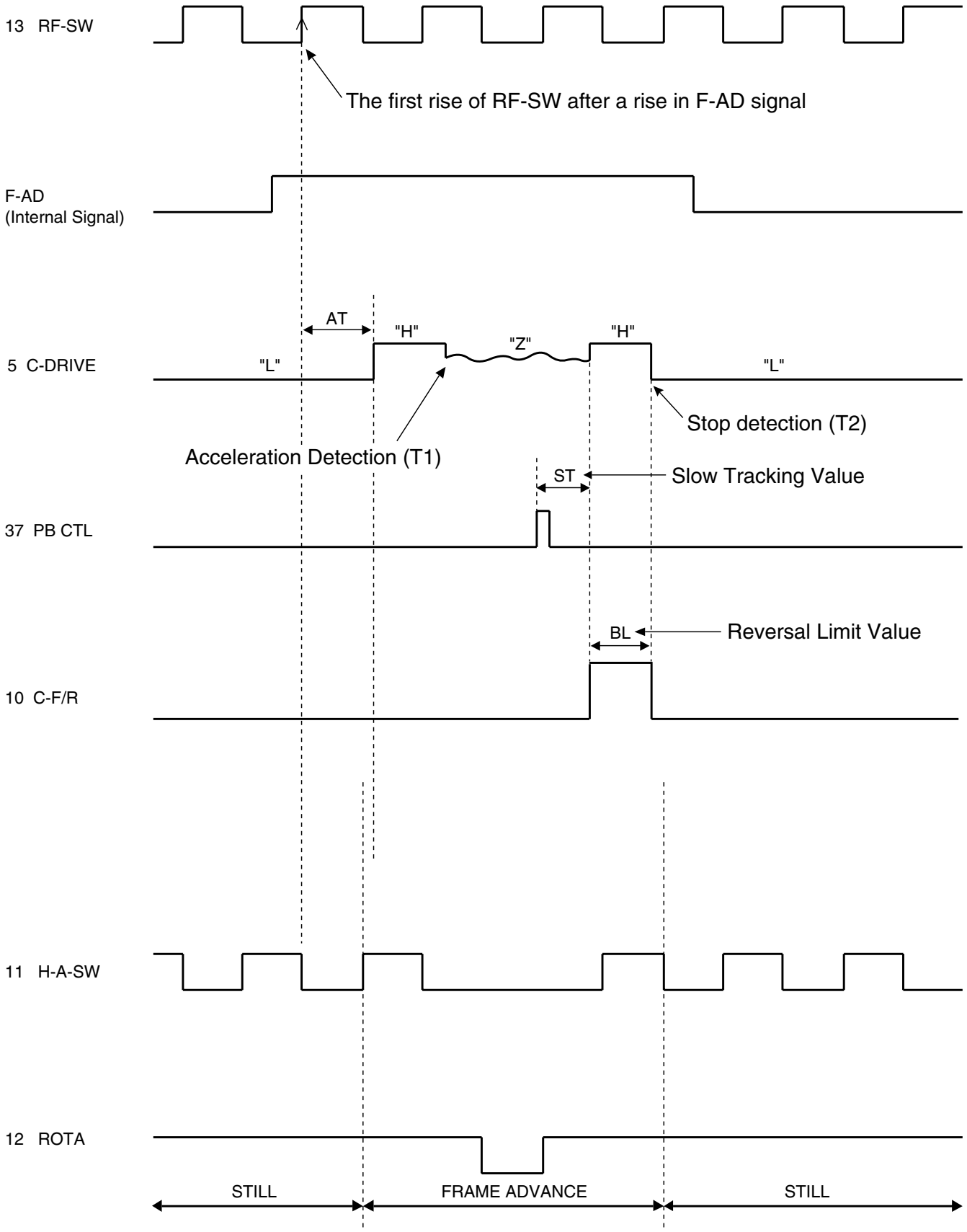
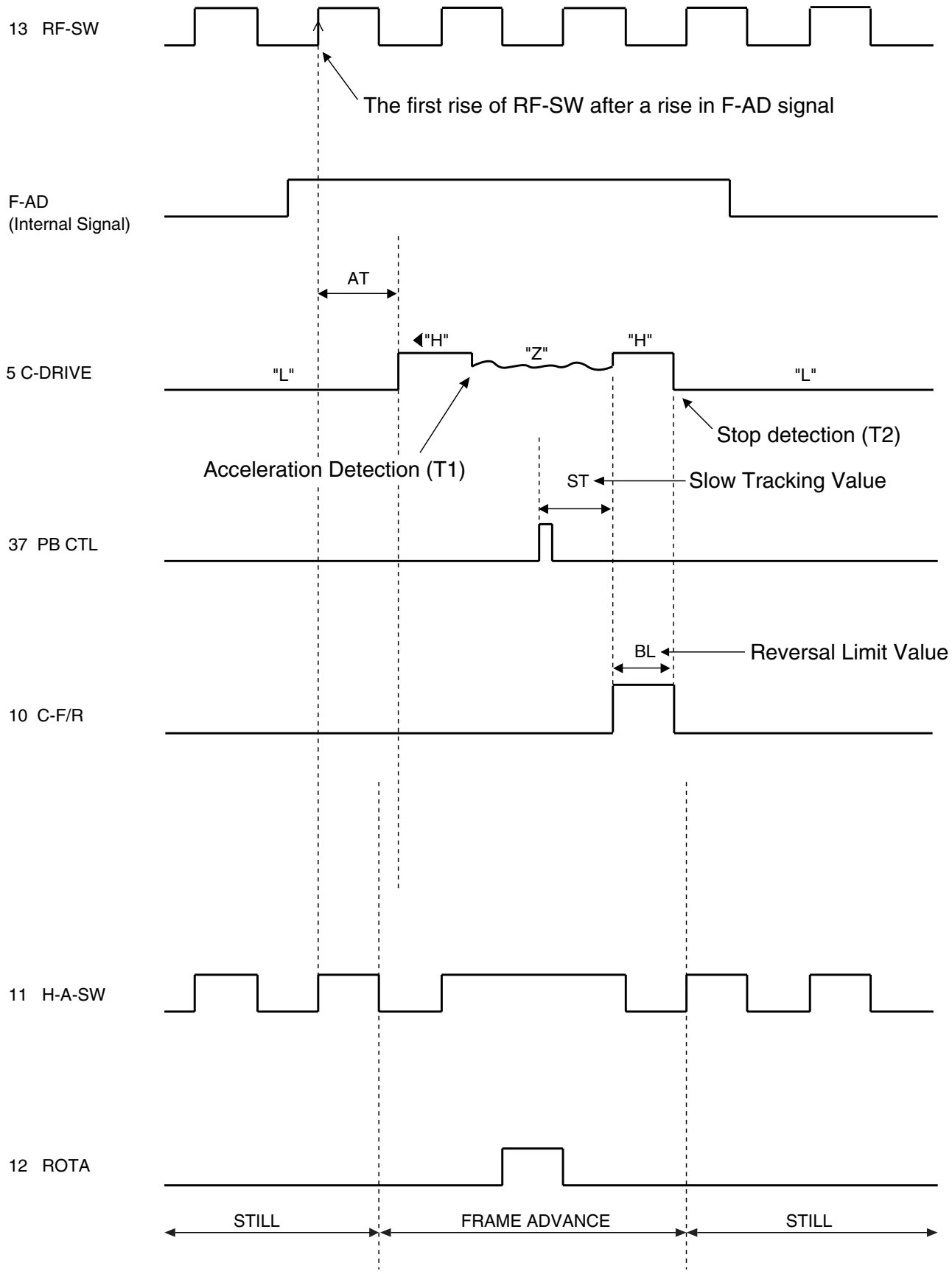

13 RF-SW
The first rise of RF-SW after a rise in F-AD signal
F-AD
(Internal Signal)
AT
"H"
"Z"
"H"
5 C-DRIVE
"L"
"L"
Stop detection (T2)
Acceleration Detection (T1)
ST
Slow Tracking Value
37 PB CTL
BL
Reversal Limit Value
10 C-F/R
11 H-A-SW
12 ROTA
STILL
FRAME ADVANCE
STILL

Fig. 1


13 RF-SW
The first rise of RF-SW after a rise in F-AD signal
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"H"
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Stop detection (T2)
Acceleration Detection (T1)
ST
Slow Tracking Value
37 PB CTL
BL
Reversal Limit Value
10 C-F/R
11 H-A-SW
12 ROTA
STILL
FRAME ADVANCE
STILL

Fig. 2

1. EJECT (POWER OFF) -> CASSETTE IN (POWER ON) -> STOP(B) -> STOP(A) -> PLAY -> RS -> FS -> PLAY -> STILL -> PLAY -> STOP(A)

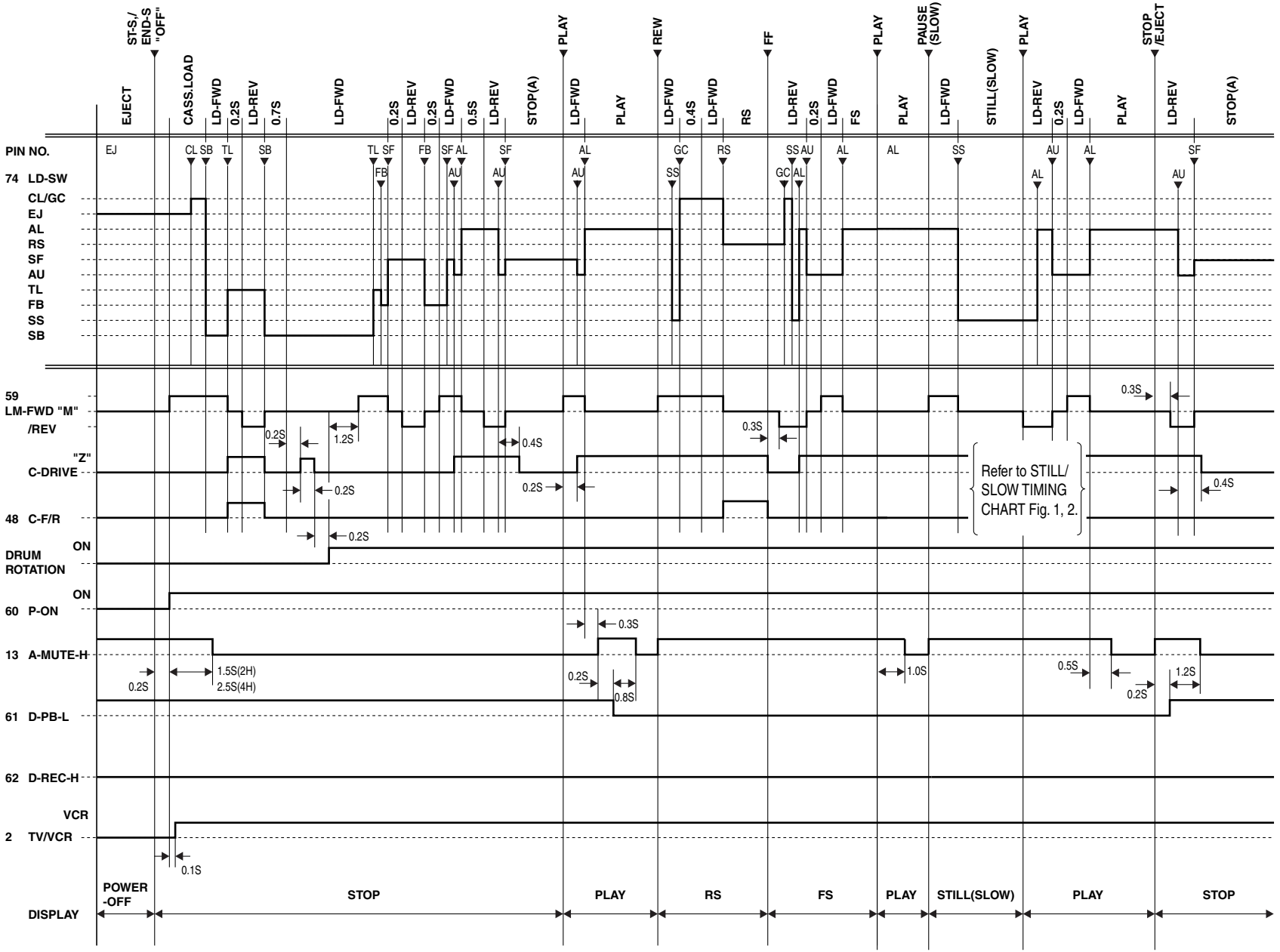


Fig. 3

2. STOP(A) -> FF -> STOP(A) -> REW -> STOP(A) -> REC -> PAUSE -> PAUSE or REC -> STOP(A) -> EJECT

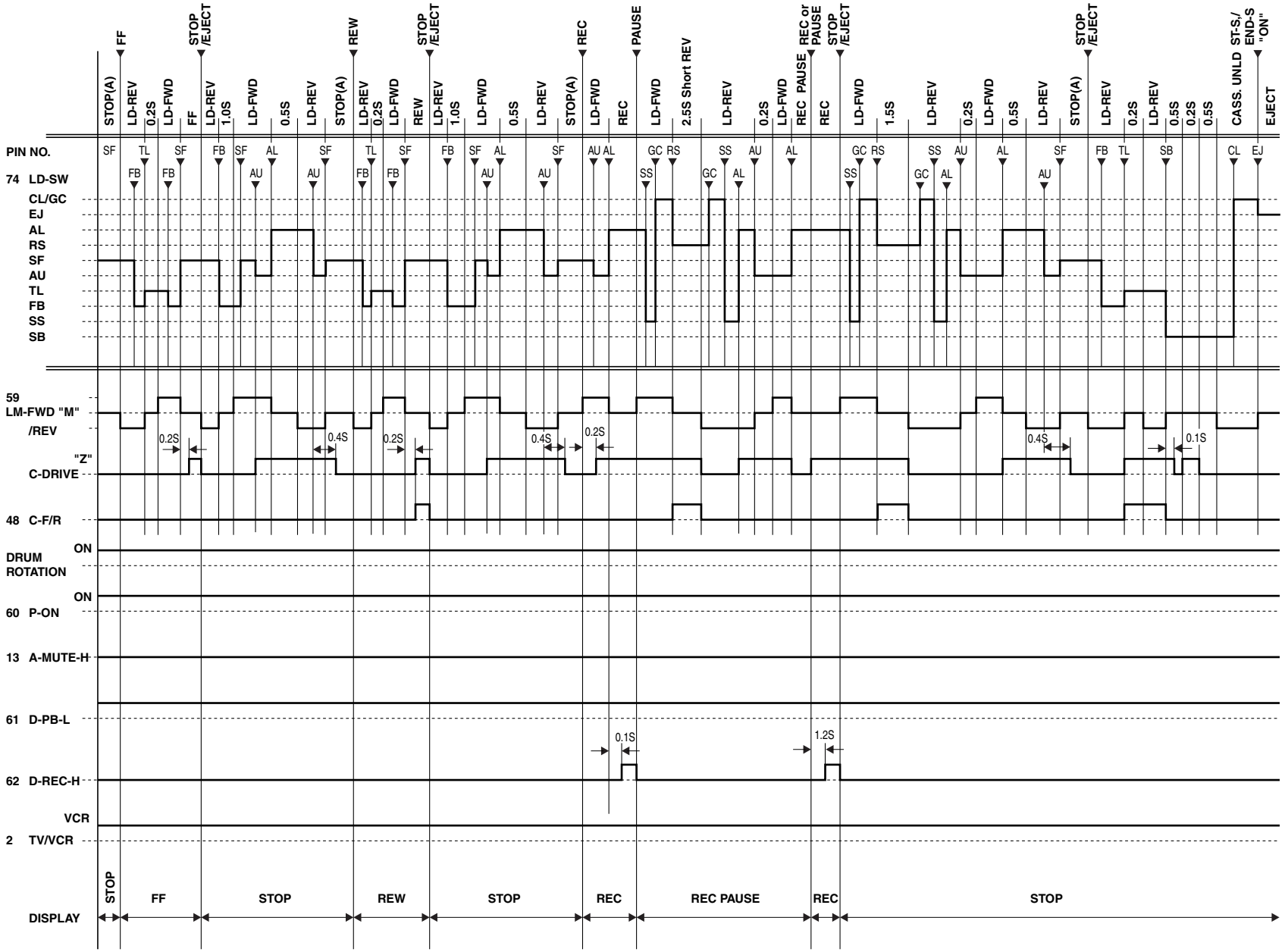
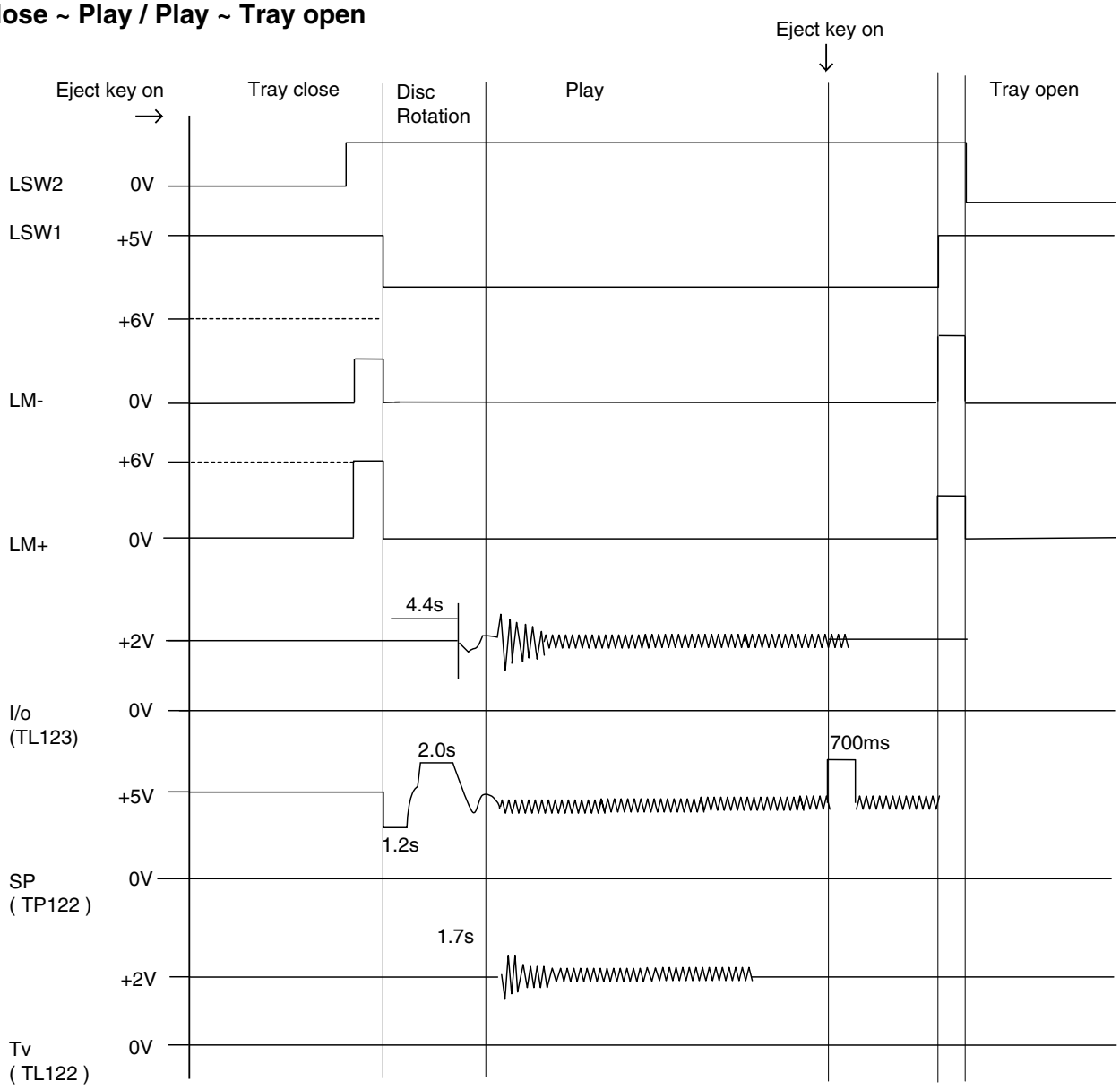


Fig. 4

Tray close ~ Play / Play ~ Tray open



IC PIN FUNCTION DESCRIPTIONS

[VCR Section]

IC501(SERVO / SYSTEM CONTROL IC)

"H" ≥ 4.5V, "L" ≤ 1.0V

Pin No.	IN/ OUT	Signal Name	Function	Active Level
1	IN	REMO-CON-IN	Remote Control Sensor	L
2	OUT	TV/VCR	RF Conv. ON/OFF Signal (TV="L"/ VCR="H")	H/L
3	-	N.U.	Not Used	-
4	OUT	DVD-POWER	DVD Power Control Signal	L
5	-	N.U.	Not Used	-
6	-	N.U.	Not Used	-
7	OUT	INSEL/ ST-SL	Input Selector Control Signal (EE/Rec)/Still/Slow (Playback)	H/Hi-z /L
8	OUT	HiFi-CS	HiFi IC Chip Select	H
9	IN/ OUT	I^2C BUS-DATA	I^2C BUS Data Input/ Output	H/L
10	OUT	I^2C BUS-CLK	I^2C BUS Clock Output	H/L
11	OUT	SERIAL-CLK	Serial IC Control Clock Output	H/L
12	OUT	SERIAL-DATA	Serial IC Control Data Output	H/L
13	OUT	A-MUTE	Audio Mute Control Signal (Mute = "H")	H
14	IN	H-A-COMP	Head Amp Coparator Signal	H/L
15	OUT	C-ROTA	Color Phase Rotary Changeover SIgnal	H/L
16	OUT	H-A-SW	Video Head Amp Switching Pulse	H/L
17	OUT	RF-SW	Video Head Switching Pulse	H/L
18	OUT	HiFi-H-SW	HiFi Audio Head Switching Pulse	H/L
19	OUT	REC-CTL (+)	Record Control Signal (+)	H/L
20	OUT	REC-CTL (-)	Record Control Signal (-)	H/L
21	IN	C-SYNC	Composite Synchronized Pulse	PULSE
22	-	GND	GND	-
23	-	N.U.	Not Used	-
24	-	OSDVss	OSDVss	-
25	IN	REC-SW	Recoding Safety SW Detect (With Record tab="L"/ With out Record tab="H")	H/L
26	IN	C-VIDEO-IN	Composite Video Signal Input (Slicer)	-
27	IN	VHOLD	Condenser Connected Terminal (Slicer)	-
28	-	HLF	LPF Connected Terminal (Slicer)	-
29	-	GND	GND	-
30	OUT	OSD- BB-OUT	Composite Video Signal Output (Blue Back)	-
31	OUT	OSD-CHARA-OUT	Character Output (Superimposed)	-
32	-	OSDVcc	OSDVcc	-
33	OUT	D-V SYNC	Dummy V-sync Output	H/Hi-z
34	IN	RESET	System Reset Signal (Reset="L")	L
35	IN	OSC_{IN}	Clock Input for letter size	-
36	OUT	OSC_{OUT}	Clock Output for letter size	-
37	-	Vcc	Vcc	-
38	IN	X-IN	Main Clock Input 14.31818 MHz	-
39	OUT	X-OUT	Main Clock Output	-
40	-	Vss	Vss(GND)	-
41	IN	XC-IN	Sub Clock 32 kHz	-
42	OUT	XC-OUT	Sub Clock 32 kHz	-
43	IN	CLKSEL	Clock Select (GND)	L
44	-	N.U.	Not Used	-
45	OUT	SP/LP/ SLP	Top Speed Select Siganl (SP="L"/ LP="Z"/SLP="H")	H/Z/L
46	-	N.U.	Not Used	-
47	OUT	TRICK/C-G/APC	Special Playback/ Copy Guard/APC Control Signal	H/Z/L
48	OUT	C-F/R	Capstan Motor FWD/ REV Control Signal (FWD="L"/REV="H")	H/L
49	IN	T-REEL	Take Up Reel Rotation Signal	PULSE
50	-	N.U.	Not Used	-
51	IN	C-FG	Capstan Motor Rotation Detection Pulse	PULSE
52	IN	D-FG	Drum Motor Rotation Detection Pulse	PULSE
53	IN	D-PG	Drum Motor Pulse Generator	PULSE

Pin No.	IN/ OUT	Signal Name	Function	Active Level
54	IN	PB-CTL	Playback Control Signal	PULSE
55	OUT	C-CONT	Capstan Motor Control Signal	PWM
56	OUT	D-CONT	Drum Motor Control Signal	PWM
57	-	N.U.	Not Used	-
58	-	N.U.	Not Used	-
59	OUT	LM-FWD/ REV	Loading Motor FWD/ REV Outpit	H/Z/L
60	OUT	P-ON-L	Power On Signal to Low	L
61	OUT	D-PB-L	Playback Instruction Signal (Playback=”L”)	L
62	OUT	D-REC-H	Delayed Record Signal	H
63	IN	P-DOWN -L	Power Voltage Down Detector Signal	L
64	-	POW-MONITOR	DVD Power Monitor Signal (P-off="H", P-on="L")	H/L
65	IN	Hi-Fi/ NOR-IN	Audio Mode Input HiFi=”L”/ Normal=”H”	H/L
66	OUT	BLUE BACK-ON	Blueback Control Signal	H
67	IN	ST/SAP-IN	Tuner Stereo/Sap Detector Siganl Input	A/D
68	IN	END-S	Tape End Position Detect Signal	A/D
69	IN	AFC	Automatic Frequency Control Signal	A/D
70	IN	V-ENV	Video Envelope Comparator Signal	A/D
71	IN	PG-DELAY	Video Head Switching Pulse Signal Adjusted Voltage	A/D
72	IN	KEY-1	A/D Key Data Signal 1	A/D
73	IN	KEY-2	A/D Key Data Signal 2	A/D
74	IN	LD-SW	Deck Mode Position Detector Signal	A/D
75	IN	ST-S	Tape Start Position Detector Signal	A/D
76	-	AVcc	A/D Converter Power Input/ Standard Voltage Input	-
77	-	FLDVCC	FLDVcc	-
78	-	FLDVP	GND	-
79	-	N.U.	Not Used	-
80	-	N.U.	Not Used	-
81	-	N.U.	Not Used	-
82	OUT	REC LED	“REC” LED Signal Output	H/L
83	OUT	REC LED	“REC” LED Signal Output	H/L
84	OUT	TIMER LED	“TIMER” LED Signal Output	H/L
85	OUT	TIMER LED	“TIMER” LED Signal Output	H/L
86	-	N.U.	Not Used	-
87	OUT	CAS- IN LED	“CASSETTE” LED Signal Output	H/L
88	OUT	CAS- IN LED	“CASSETTE” LED Signal Output	H/L
89	OUT	VCR LED	VCR/TV Mode LED Indicate	H/L
90	OUT	VCR LED	VCR/TV Mode LED Indicate	H/L
91	OUT	DVD-L	VCR Mode LED Indicator	H
92	OUT	DVD-L	VCR Mode LED Indicator	H
93	OUT	DVD-H	Output Switching Signal DVD Mode LED Indicator	H
94	OUT	DVD-H	Output Switching Signal DVD Mode LED Indicator	H
95	-	N.U.	Not Used	-
96	-	N.U.	Not Used	-
97	-	N.U.	Not Used	-
98	-	N.U.	Not Used	-
99	-	N.U.	Not Used	-
100	OUT	OUTPUT SELECT	Output Select	H/L

Notes:

Abbreviation for Active Level:

PWM -----Pulse Wide Modulation

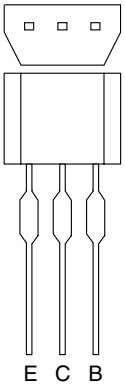
A/D--------Analog - Digital Converter

[DVD Section]

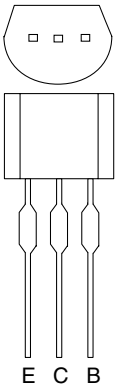
IC2001 [PT6315-S / PT6315-S]

Pin No.	In/Out	Signal Name	Name Function
1	In	CLK	Clock Input
2	In	STB	Serial Interface Strobe
3	In	K1	Key Data 1 Input
4	In	K2	Key Data 2 Input
5	-	VSS	GND
6	-	VDD	Power Supply
7	Out	a / KEY-1	Segment Output / Key Souce-1
8	Out	b / Key-2	Segment Output / Key Souce-2
9	Out	c / Key-3	Segment Output / Key Souce-3
10	Out	d / Key-4	Segment Output/ Key Souce-4
11	Out	e	Segment Output
12	In	f	
13	In	g	
14	Out	h	
15	-	VEE	Pull Down Level
16	Out	i	Segment Output
17	Out	7G	Grid Output
18		6G	
19		5G	
20		4G	
21		3G	
22		2G	
23		1G	
24	-	VDD	Power Supply
25	-	VSS	GND
26	In	OSC	Oscillator Input
27	Out	DOUT	Serial Data Output
28	In	DIN	Serial Data Input

LEAD IDENTIFICATIONS



BN1F4M-T
BA1F4M-T
KTA1266(GR)
KTC3193(Y)
KTC3199(Y,GR,BL)
2SC2785(J.H.F.K)
2SA1015-GR(TPE2)
KTC3198(Y,GR)
KRC103M
KRA103M
2SA966(Y)
2SC2236-Y-TPE6,C



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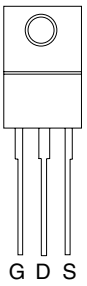
2SC1815-Y(TPE2)
2SC1815-GR(TPE2)
2SC3331(T,U)
2SC2120-Y(TPE2)
KTC3203(Y)
KTC3202(Y)
KRC110M-AT
BA1L3Z-T
KTC3205 (Y)
BN1L3Z(P)
KRA110M
KTA1273(Y)

2SK2662
KIA78R33PI
PQ3RD13(1A)



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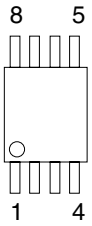

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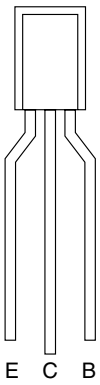
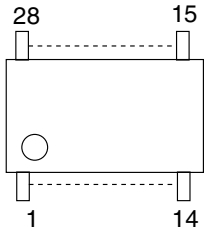


PT6315-S
PT6315-S(-TP)



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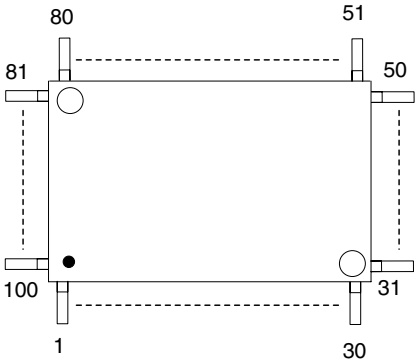

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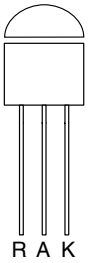

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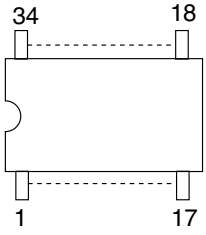

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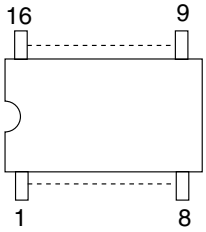

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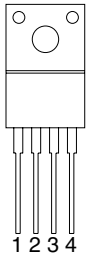

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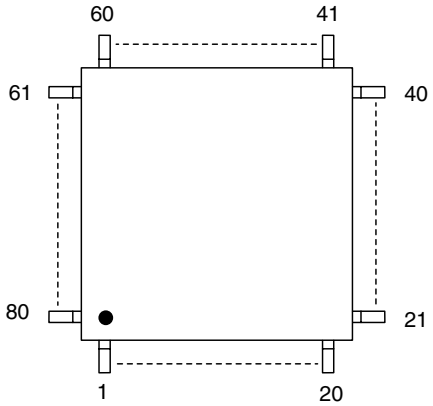

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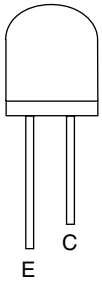

Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
S: Source
G: Gate
D: Drain

DV-PF2U

HITACHI

DV-PF2U

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